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No. 1.

Original Communications.¹

SOME USES FOR ENGLISH TUBE-TEETH.²

BY HORATIO C. MERIAM, D.M.D., SALEM, MASS.

It would be a pleasant task if one could recall the various forms and methods used in crowning and give the merits of each their fitting place, but to-night I am to confine myself to some uses for English tube-teeth. I shall have the pleasure of first showing some of the ways that they may be used as crowns; then as they may be fastened to a cap or ring around an adjoining tooth, limiting myself to the bicuspid teeth as far as possible. Then refer to some of the instruments and methods of working, and present some general considerations bearing on the teaching of methods. Those who wish for a fuller account than can be given to-night I refer to an article by Mr. John Girdwood, L.D.S. (Edin.), D.D.S. (Univ. of Pa.), read before the World's Columbian Dental Congress and printed in Vol. I. of its transactions.

Of the two mechanical means now used in attaching crowns, the dowel, commonly called a pivot, was the method used until the gold

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read before the American Academy of Dental Science, April 2, 1902.

cap came into use. This may be said to have given us the mortise and tenon, the cap representing the mortise and the root to be crowned the tenon; and we combine both when we use a pin or dowel in connection with a banded crown. The details of root preparation may be passed over, but later the importance of being guided by their anatomy will be pointed out. We have in the English tube-teeth a fine piece of porcelain with a hole through it lined with a platinum tube, which guarantees uniformity of diameter. This porcelain may be ground and polished without injury to its surface, a fine texture fits it admirably for matching certain colors in the natural teeth, and the hole through it allows for all the forms of attachment that can possibly be made by dowelling or its equivalent (Fig. 1, *a*).

We have, after grinding the tooth to fit the root and seeing that it has the right occlusion, the simple form of a dowel passing through the tooth into the root (Fig. 1, *b*).

Next we have the tooth concaved on its surface against the root to hold cement or gutta-percha as a preservation (Fig. 1, *c*); to this may be added the grinding-out to allow the use of a headed dowel or pin (Fig. 1, *d*).

Some years since Mr. Hodge brought some hard Butler points made by vitrifying. I then knew little of the process, but when I became familiar with the processes of the Waltham Wheel Company I had some made there. Since the Indian oil-stone has been introduced I have had some made of that material which are suitable for this countersinking, as are also some forms made of carborundum and rubber, though these may not keep their shape as well as the harder material. Pins may be made by fusing to the end, if platinum, a globule of pure gold (Fig. 2, *a*), or if of spring gold wire (Fig. 2, *b*), which is often used, by fusing the end into a globule, and then passing it through a hole in a suitable anvil or a draw-plate, driving it down flat; or a small piece of plate may be soldered to the end of the pin (Fig. 2, *c*), the pin afterwards being held in a chuck and the head filed to fit the countersunk hole in the grinding surface of the crown. A long screw may be used, though screwing a screw up the centre of a root is not to be recommended, nor has the use of a headed pin much to commend it. One of the advantages of the use of these teeth is that we can insert the pin, see that the gutta-percha is packed well about it, and then slip the

FIG. 1.

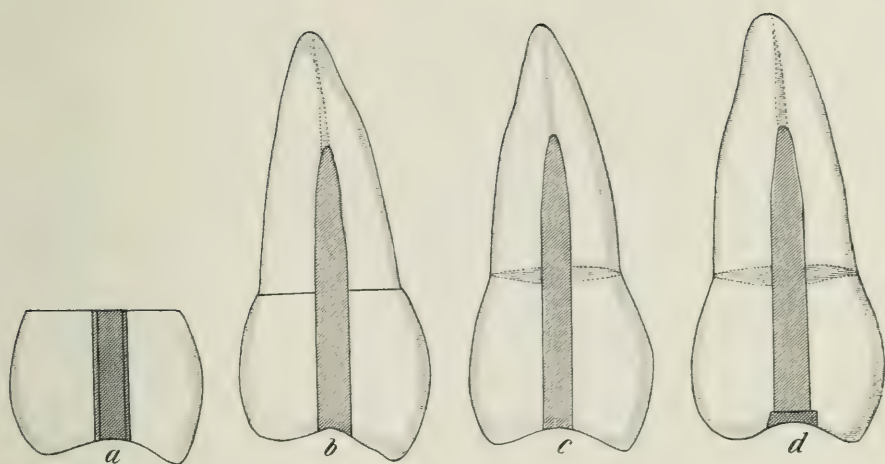


FIG. 2.

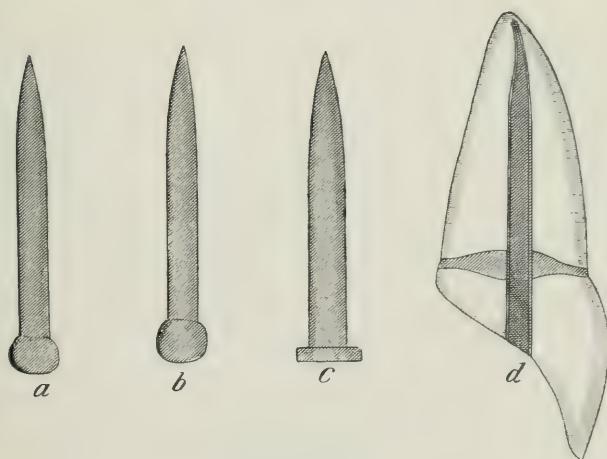


FIG. 3.

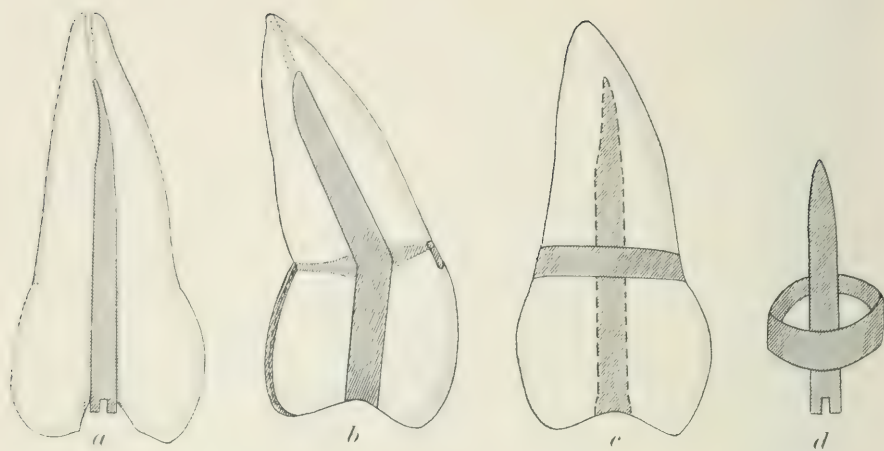
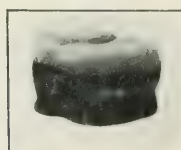


FIG. 4.



FIG. 5.



crown on. The pin may, of course, be tapped and a small screw put in or a tube used, should it be desirable to crown a tooth before the drainage of pus has ceased in cases under treatment. This may often be desirable in the incisors, and for this these teeth are specially adapted (Fig. 2, *d*). I am taking it for granted that you are all familiar with the platinum and iridium tubes that were introduced in the Academy some years ago. My own choice is a pin with a slot cut in the end as you would for a screw, and then, after this has been placed in the root and the tooth put on, filling this and the countersunk space with gold-foil (Fig. 3, *a*).

This covers some of the ways in which a dowel may be used. We now take those cases where it is judged best to use a banded crown. For this band a firmer gold should be made than is ordinarily used for crowns, for it often has to be made narrow, and in some cases to bear much strain, so that the gold and solder the formula for which was presented to the Academy not long since should be used. The band should be first fitted to the root and then placed on the round part of an anvil, and the upper edge that is to receive the crown spread by striking with a small round-faced hammer; then annealed and placed root end down on a piece of lead or air-chamber metal, and the tooth, previously ground to correspond with the root diameter of the band, protected by another piece of the soft metal and driven in. It may be necessary to remove and reanneal to spread the ring a little more. To show what can be done, a molar tooth is reproduced here (Fig. 5). It was made some years since to show students. Such a stretching would not take place in soft gold, as the ring would go down under the hammer. The bands may be made narrow or not as the case indicates, and cut away on the buccal surface, this being reinforced if need be. In cases where the bite is short it is best to let the band come well down, so as to meet the occlusion of the under teeth on the palatal surface, that the strain may be taken off of the porcelain; this surface can also be reinforced (Fig. 4, *a*).

Teeth may also be ground so as to be much inclined inward or outward to meet occlusion or to harmonize with those adjoining. One such case is shown here (Fig. 3, *b*). Where it is desired to cap the root without letting the band run on to the crown the cap may be made as usual (Fig. 3, *c*, *d*), with the centre pin

running through, and the tooth put on and finished in any of the ways previously shown. In some short bites it is an advantage to have the pin take the force of occlusion and protect the porcelain.

All that has been shown should be understood to refer to the second bicuspid or to teeth with one straight root and canal. It is desirable to make a distinct break before passing to the methods for treating the first superior bicuspid. To the solemn prayer of the Litany for the multiplied sorrows of life may well be added a petition,—that the Lord would indue the hearts and minds of his servants in our calling with mercy for the first superior bicuspid. The violence done to its anatomy by the diskers and contourists in its earlier years is followed by the reamer of the fitter of the ready-made crown, and its sad fate may well justify a special petition in its behalf. It is no doubt a credit to tooth-makers that we use anything that they choose to make without murmuring, but is it to us? Recall for a moment a section of an ordinary first bicuspid made near the gum line (Fig. 4, *b*), then a longitudinal section of the same root (Fig. 4, *c*), and name the tooth that you can buy ready made in the shops that is fitted to be used in crowning it. Its anatomy should dictate absolutely what method and crown should be used.

I reproduce here a cut of a pin shown by Mr. John Girdwood in his paper before alluded to, who states that it was devised by his partner, Mr. John Stewart, L.D.S. It has been in use by me for many years, and as I have not reported it I can advise it the more heartily as the credit for its introduction must be given to another. Mr. Girdwood shows it as made in two ways by soldering an upright to the forked cross-pin (Fig. 6, *a*), and by soldering a pin to the side (Fig. 6, *b*). I have never used the latter method. Mr. Girdwood seems to use but one size of wire. My practice has been to use No. 17, English standard gauge, for the tooth, and a smaller size for the root, varying the latter to correspond with the size of the root-canal. In small teeth the ends of the bifid pin may be made small enough to take the curve of the canal. They have also been made by using a wire one-half the size of the hole in the tube-tooth, twisting this for the length of the crown (Fig. 6, *c*), dividing and fitting to the root, and flowing a little gold solder over the twisted portion. The root of this tooth is often wide, in its palatal-buccal diameter, and there is sometimes a little trouble in having the crown portion of the pin in the right position; to overcome

FIG. 6.

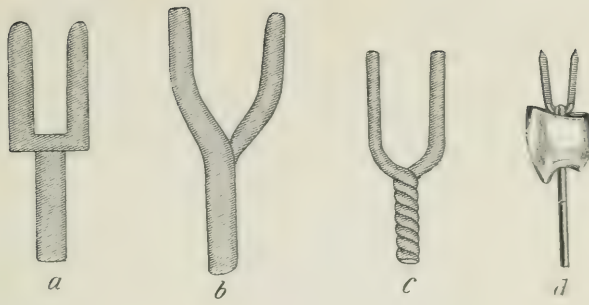


FIG. 7.

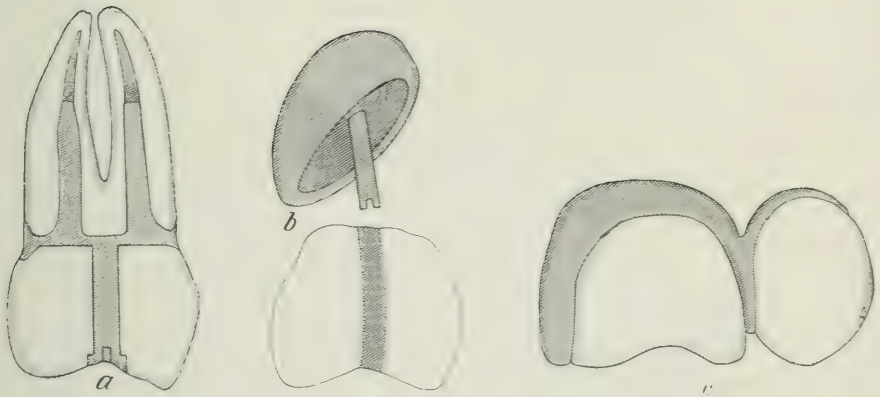
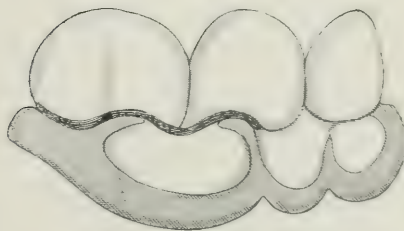


FIG. 8.



this I use a half-round wire of the same number; the forked part, too, may be fitted first, then the wire bent around it, and compressed but not fastened (Fig. 6, *d*). The pin may then be tried in, the crown slipped on, and, when the right position has been found, removed and soldered. This pin may prove of value when there is great variation between the hole in the tooth and the root-canal, by using a pin bent at a right angle and the half-round wire bent and soldered to it. All that has been given regarding cap and band applies to this tooth, but the cap should have a pin for each root and a centre pin for the crown, to be fastened, preferably, by a gold filling (Fig. 7, *a*).

A method of using tube-teeth for extension crowns was given before the Academy some years since, and need only be recalled here, but the cup and pin shown (Fig. 7, *b*) can be used when it is desired to insert a bicuspid by banding or capping the first molar. The cup is made by fitting the tooth to the band as given earlier in the paper, a round cup with a pin in it is burnished over the upper portion of the tooth and band, care being taken to bend the edges of the cup over so as to indicate the relative position of cup and band, and the tooth is then removed and the cup and band soldered together. This cup is placed against the cap (Fig. 7, *c*) on the molar and soldered to it.

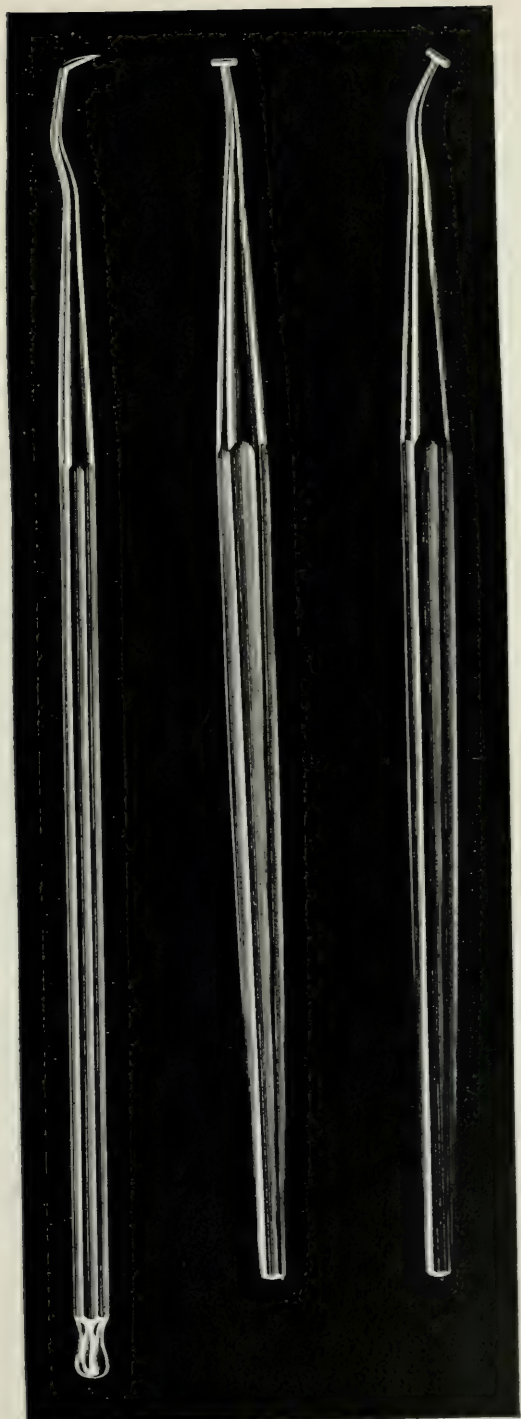
If a band is used on the molar it should be reinforced to give sufficient strength when cut away on the buccal side, and it should come to a sharp occlusion with the under teeth at its distal surface. It is best to wedge well and by reinforcing at this point secure contour. The distal occlusion helps to hold the band in position. In one case a large cavity has been filled with amalgam after putting on the band, and in another the band has been cut and fitted to correspond with the cusps of the molars. The treatment of another case is here shown where the band was extended backward to secure occlusion with a superior third molar (Fig. 8). Several cups could be used by soldering together for small bridges, removable if desired.

I have purposely left some things for mention after giving general directions. The importance of contour for crowns should not be overlooked, both as a protection to the membranes around the teeth and to aid in keeping the root in position. The bicuspid teeth move outward if they are given only a partial occlusion. They do not call for sharp cusps, but the occlusion should be even to keep them in line, and they should be large enough at

the neck to cover the root, and extend beyond far enough to equal the protection once given by the natural crown. I would call attention to the Whitten scaler for trimming. I was with the late Dr. Whitten when he gave directions to Mr. Schmidt for making them, and I reproduce the 000 size here, because, while it is well known in Boston, it is not in other cities, and because for some of the work in trimming roots it is the best instrument that I know. This leads to the control of bleeding while trimming roots. For this, tincture of iodine is preferred, for it penetrates deeply and contracts the vessels when some agents only coagulate the blood at the surface. The cheek may be protected during grinding by using a cotton-fibre pad, which adheres to the cheek for a time and allows for easy holding away from the wheel. Small squares of bibulous paper, for root drying, folded diagonally and rolled, are of value. The squares are made by sending a thousand or more sheets to a book-binder and having him cut them to the desired size. It is much better than cotton for wrapping around a broach, as it goes on evenly. In the use of a broach it is well to dip it into peroxide. It can be neutralized by bicarbonate of soda if there is fear of its acting on the steel of the broach.

Polishing is dirty work. Ready cleansing of the hands can be secured by making a polishing composition containing soap,—one part powdered Castile soap and two parts of whatever polishing substance is to be used, to which add a small quantity of oil and a little water, all to be heated together and poured or pressed into a small paper box. This can be used in polishing, and the hands readily cleansed for operating. In polishing, large buffing wheels six or eight inches in diameter give the polish such as we see on jewelry. Felt wheels of the same size give smoother work than smaller ones. Cutter, Wood & Stevens Company, 68-70 Pearl Street, Boston, supply these shown. Fine chalk, called by dealers in painters' supplies French white, is smoother than whiting.

You may have noticed the lines on the pins shown. These are made by the checkering or grooving file introduced by Dr. Benjamin Lord for lining scalers. A wire is here shown to indicate how easily it can be serrated, as the file cuts only lines. A pin is easily forged cold from platinum and iridium, and then lined or serrated. These files can be had from F. W. Gesswein Company, 39 John Street, New York, whose catalogue contains much of value. It is there that many of the dental dealers get



Whitten scaler,
size 000.

Burnishers.

their supplies. I show some burnishers which are of value in burnishing bands or gold crowns against the root on the buccal and palatal surfaces. A piece of rattan notched on the end to fit a crown is an aid in driving to place.

I fear that I have wandered far and taken you a dreary way in following the subject, but a call of the Academy cannot be lightly disregarded. If something of more value may be brought out in discussion I shall be well pleased. I hoped, by showing what could be done with one form of tooth, to broaden the subject, so that we could see the part it can have in our calling. Especially is this true of teaching; no one device or crown will do for all. Nor can the man taught only ready-made methods serve his profession or patient best. Professor McVeagh spoke here of the teaching of history at Harvard as not teaching what writers of history said, but taking men back to the study of original documents,—that is, to the source. Professor Dicey, of Oxford, said of the teaching of law at Harvard that “they were teaching the law of the English-speaking people.” Many of us can recall the teaching of Dr. Bowditch in physiology, that it was the study of how nature acted in man, and how little of it we could read up. And if this is true for law, history, and medicine at Harvard, why not for our calling? Hard examinations are of little value in themselves; the result of the training should be that in addition to competent workmen it gives us men with active intelligence in matters relating to dentistry. One favorite study will liberalize the mind, and by making our art a liberal art we shall broaden as our study broadens, and daily duties will become daily pleasures.

I said a moment ago I had wandered far, but not perhaps farther than the subject has led me. Art is long, let us include as much as we can; and go back for a moment to the great prophet of Israel: “They helped every one his neighbor, and every one said unto his brother, be of good courage. So the carpenter encouraged the goldsmith, and he that smootheth with the hammer him that smote the anvil, saying, It is ready for the soldering: and he fastened it with nails, that it should not be moved.”

MANAGEMENT OF CHILDREN IN THE DENTAL OFFICE.¹

BY DR. HORACE E. EATON, TORONTO, CANADA.

THE importance of caring for the teeth of the child is so well known and recognized to-day that I need not trespass upon your time by pointing out the many benefits arising from it. Much has been written regarding the treatment and filling of children's teeth, but in this paper it is my purpose to deal only with the matter of managing the children themselves in such a way as to secure the most favorable conditions for satisfactory work. I do not propose to formulate any fanciful theory which would fail to work out in practice, for I do not wish to infringe upon the rights of those elderly maidens and childless wives who so kindly acquaint the public through the ladies' journals with their unbounded knowledge of child management in all its details. I shall endeavor to give you a simple record of the results obtained in my own practice while following out a few fundamental principles.

Am I not correct when I say that the average practitioner prefers an adult to a child for his patient? With the former he can, as a rule, accomplish more in a given time, and more satisfactorily. But is it less important that the child should have the very best treatment it is possible to give? Emphatically, no! It becomes our duty, then, to study ways and means, for I consider the successful management of the child as less important only than the care of its teeth. A dentist becomes a public benefactor when he can so successfully manage the child as to prevent or lessen its fear of dental operations, since even a single instance of fright or terror may have a lasting and harmful effect upon early mental development. The result from a professional standpoint is that operations can be more successfully performed and the child's teeth more regularly attended to.

Let me state, at the outset, that in order to achieve the greatest success in the management of the child, one should love children. If you do not possess this qualification, then cultivate it. It is your passport to the confidence of the child, which in turn is the first step towards its successful management. And the average child

¹ Read before the Massachusetts Dental Society, June 4, 1902.

is very quick to discern whether you have your passport. In attempting to form the acquaintance with and gain the confidence of the child the mistake is often made by us of proceeding from a grown-up stand-point instead of from that of the child. The child at once pictures the dentist in its mind as some awful, dignified creature that does not belong to its world. Thus a barrier is formed preventing further acquaintance. Let me say, in this connection, that the average child draws a marked line of distinction between a dentist and an ordinary family man; and in many cases with a prejudice against the dentist which has to be taken into consideration. To illustrate. A bright little girl about five years of age, when dining with us, fastened her eyes intently upon me, and asked, "Are you a father?" "Yes," I answered. "Are you a doctor?" I replied that I was. "Well," said she, "I don't see how you can be a father and a doctor too." To the child's mind the father was a human being, but the doctor—well, he was just a doctor, and perhaps an inhuman being.

When the child comes to the dentist for the first time, in the majority of cases you may be sure it has some conception of a dentist and his business, and that conception is formed usually from hearing injudicious remarks made by older members of the family. Therefore, we have first to overcome whatever prejudice there may be in its mind. In order to accomplish this, do not think your time too valuable to spend a few moments chatting with the little one. In this way you will probably discover some subject of special interest that you may afterwards use to good advantage in the management of the child. As a result of such conversations little girls have frequently brought their dolls for my inspection, and boys their boats and other toys, because I had exhibited an interest in these things during our conversations.

In placing a child—especially a nervous one—in the chair for the first time, make it a point to draw the attention, as far as possible, from anything that suggests work upon the teeth, until that timid, open-eyed watchfulness—expecting every moment to see the Jack pop out of the box—passes off. If it can possibly be arranged, do not have the mother accompany the child, for she is often the harder of the two to manage. In nine cases out of ten she will begin by saying something like this: "Now, it won't hurt you—you needn't be frightened, mother is right here." Then, as a side remark, she will tell how very nervous the child is,—“just

like her mother,"—and in the same breath will relate some harrowing tale of her own experience in the dental chair. All this you have to tolerate or cut short as your wisdom directs you.

As a rule, it is unwise to inform the child at the beginning as to whether or not the operation will be a painful one, unless it may be in a case of extraction where you know it will be painful. In such a case it is better to tell the child frankly that it will probably hurt a little, but assuring it that you will be as gentle as possible. But never say it will not hurt when you know that it must, for in the majority of cases the child has learned from the inconsistencies of its parents not to take seriously what you say about the matter. Never, under any circumstances, deceive a child. I have heard more than once of a dentist concealing the forceps up his sleeve, and asking the little patient to just let him look at the tooth. With the assurance that he would not take it out, he would then slip the forceps on and make the extraction. A man can do this but once before losing the confidence of the child and making it fear everything in connection with dentistry. It is supposed by some, I believe, to be clever. It is not. It is wicked, and should be denounced in the strongest terms.

Most children are imaginative to a wonderful degree, and this can be turned to excellent account. I sometimes liken the chair to an elevator, and ask them if they would like to go up to the toy department, or as I elevate the chair I make allusion to the story of "Jack and the Bean Stalk," which most children have had read to them, and they very much enjoy the "Hitch my toe, and up I go." It is surprising how quickly through their fanciful imaginations they enter into the spirit of it all.

The first step gained,—viz., the fear of the place and the fear of the dentist overcome,—I proceed to examine and excavate the cavity. By this time I have become so far acquainted with my little patient as to have discovered the direction of some strong inclination or hobby, which, as I have already hinted, I follow up. For example, a little patient of mine, I soon discovered, was passionately fond of fairy stories,—in fact, she was so absorbed by them that she seemed to live in fairy-land all the time. Taking advantage of this and following out a suggestion of her own,—that a family of fairies had made a house in her tooth,—I said, taking up an excavator, "Now, I'll just take this little fairy axe and break into the house and drive them out. You listen to them

jump from their beds when they hear the noise on the roof." And so I got the walls of the cavity broken down and the excavation well proceeded with, much to the amusement and enjoyment of my little patient. Then, wishing to use the bur, I remarked, "I'm going to take this fairy broom now, and sweep the house out clean, fairies and all." I proceeded to drill, and any pain connected with it I blamed upon the fairy family rushing around to escape the broom, and upon their being thrown out by it. After the house was rid of the fairies and the floor swept clean, I repaired the hole I had made in the roof and the tooth was filled.

Another case. A little chap, who is a soldier from the ground up, made the remark to me one day as he seated himself in the chair, "The enemy have intrenched themselves in my teeth; what had we better do about it?" I answered that I thought we had better make an attack upon their fortifications. His enjoyment and interest were intense when I advanced with picks, shovels, and machine drills, and finally compelled the enemy to surrender. The breeches in the fort were then repaired and our men placed on duty to guard against a return of the enemy. I put him in command of the fort, with orders to go carefully over the outside walls with a tooth-brush and dentifrice every night and morning to clear away any of the enemy that might be lurking around. So I succeeded not only in making the operation a pleasure to him, but in getting him to take an interest in keeping his teeth clean. He calls me the inspector of fortifications.

Still another case. I found it necessary to use the engine in the preparation of a cavity for a timid little girl. I scarcely knew how to manage it, for the slightest thing seemed to alarm her. Finally an idea came to me. I placed a bur in the hand-piece of my engine and said, "Have I ever shown you this musical instrument?" She said I had not. "Well," I said, "I'll play a tune for you on your tooth, and see if you can discover what tune it is." I began, charging her over and over again to pay very strict attention to the music. When the cavity was prepared, I said, "There, I have played one verse for you, do you know what tune it was?" "Yes," she replied, quite pleased with herself, "it was 'Soldiers of the Queen'." Of course she had a Canadian ear. To a child on this side of the line the same music might have been interpreted as "Yankee Doodle."

I once suggested to a little boy that we should go for a ride

on a tandem wheel, and offered him his choice of seats. He chose the front. "Then," I said, "you will have to do the steering," which, of course, pleased him very much. I placed his hands each upon an arm of the chair, which served as the handle-bars. Everything ready, the engine hand-piece in my hand, I gave the word to start. As I drilled at his tooth, I called his attention to the roughness of the pavement and the rumble of the wheel, and cautioned him to be very careful about passing people, so that we might have no accident. I also called off the streets as we passed them, and thus kept his mind well employed while I was getting the cavity prepared. When we arrived at our destination he was so delighted with the trip that he wanted to turn around at once and take it over again. I could name dozens of other cases where, by taking advantage of the child's power of imagination and love of stories, I have succeeded in changing its thought of terror to one of pleasure. In some cases the child would even pretend to its mother that there was something wrong with its teeth, as an excuse to be taken to the dentist.

Now, let us for a moment consider the foregoing illustrations. What has taken place? Simply this: A pleasing and interesting picture has been suggested to the child's mind, stimulating the imagination and occupying the whole of the attention. The brain, being thus occupied, cannot attend at the same time to other calls; hence the sensations produced by the operation are greatly diminished. Again, the pleasure produced by the suggested thought is so intimately associated with the work being done that the operation itself becomes transformed into a pleasant experience. Ruskin tells us that when young he associated the name "crocodile" with the creature so closely that the long series of letters took on something of the look of its lanky body. The same writer speaks of a Dr. Grant, into whose therapeutic hands he fell when a child. "The name," he adds, "is always associated in my mind with a brown powder—rhubarb, or the like—of a gritty or acrid nature." We can, most of us, perhaps, recall similar experiences, where colors or sounds, in themselves indifferent, took on, through analogy and association, a decidedly repulsive or decidedly pleasurable character. In dealing with children in the ways I have described, the object is gained of making the story or suggested thought the prominent feature of the visit in the child's mind. Filling the teeth becomes a mere incident. To further illus-

trate this point. A little chap came into my office one day with this remark: "Dr. Eaton, I've come back to hear the rest of that story."

I conclude, then, that a very large part of the disagreeableness in connection with a dental operation is due to the picture that is previously formed of it in the patient's mind. For instance, have you not all experienced the following? In beginning the preparation of a cavity your patient flinches and cringes until you assure him that the cavity is a small one not near the nerve, or tell him it is not a sensitive part of the tooth. Immediately he quiets down and allows you to proceed with the work. It seems strange that it should be necessary in certain cases to inform one's patient that this or that part is not sensitive, when he should be the first to find it out. But the explanation is this. So vividly has he imagined it is going to hurt that it is necessary to inform him to the contrary before he can realize that it does not. Ask a boy to run around the block to do an errand for you. He does not want to go,—he is tired; but five minutes later another boy comes along and asks him to join in a paper chase or game of tag. He at once accepts the invitation and probably runs almost constantly for the next two hours. How may this be accounted for? By the difference in the pictures formed in the boy's mind,—the one is pleasing to him, the other is not.

Thus far I have dealt only with one class of children, the imaginative sort. But there are those who have no imagination whatever, and to whom the suggestion I have offered would not in any sense apply. These, however, as well as other children, have human nature enough to enjoy a little of what is commonly called "taffy." For instance, if I say, as I begin work, "Why, how wonderfully still you keep! And how wide you can hold your mouth open! Now, some children would be talking and twisting about," it is amusing to see the effort that will be put forth to maintain this reputation.

Then, we meet with other children who study to oppose in every possible way. These are not always hopeless cases. Perhaps illustration will best describe the handling of such. I once attempted to insert a cement filling in the mouth of a little girl aged about five years. Applying the rubber dam was out of the question, and the trick was to keep the cavity dry long enough to get the cement in,—for as soon as she discovered that I was

anxious to keep it dry, she was just as anxious to get it wet. After an unsuccessful attempt, I said to my assistant, "Now, I say she will get it wet this time; what do *you* say?" "I say the same." Determination to keep it dry could be seen in her face, and as I proceeded I remarked, "If she would only begin to talk and get that cavity wet, then we would be right." But no, her tongue remained motionless until the operation was completed, when I announced, to her great satisfaction, that we were wrong. Another little patient brought by her mother would not sit in the chair. Instead of coaxing her, I had her mother take the chair, and proceeded as if doing work for her. The child standing in front of her, defiantly looked at me and said, "I will not let you fix my teeth." I replied, "Well, I haven't time to attend to yours to-day, anyway; I am too busy,—couldn't do it if you wished me to." She immediately changed her attitude and wanted her teeth fixed. Of course, I reluctantly consented to wait upon her.

We have also the spoiled child to deal with,—one who has become the lord of the home, and thinks he is privileged to exercise the same right wherever he goes. This child needs special treatment. Great care must be exercised lest he become so well acquainted with you that you entirely lose control over him. Playing with him is often dangerous. Firmness, with kindness, must be used, but never use force to compel a child to undergo an operation, although you may often be asked by the mother to do so. Let me say, with double emphasis, *never, under any circumstances, lose your temper with the child.* This sometimes will require an abundance of grace.

I wish to make myself clearly understood with regard to the methods of management that I have suggested. They are not play, though they may appear so to the child, for I introduce nothing that will not in some way serve my purpose. I proceed on a definite plan, with definite principles of which I never lose sight. While the particular methods I have described may apply only to children of certain dispositions, I trust that they afford some illustration of underlying principles that are applicable in every case. I shall be satisfied if I have thrown out some suggestions that may stimulate interest and thought along the line of making it easier for children to receive proper dental treatment, and more pleasant for operators to give it. The importance of getting children

started right can hardly be over-estimated. It is to their experience with dentistry what the kindergarten is to their education,—it carries them over a very trying period in a very enjoyable way.

As we are the fathers of the next generation of dentists, so these little ones are to be their future patients. Let us face the responsibility that is surely ours, and hand over to them patients whose minds are rid of any false dread of the dental chair. By so doing we shall remove in a large measure that popular antipathy to everything connected with dentistry that to-day hampers the profession in its efforts to benefit those whom it endeavors to serve.

DENTAL REGULATIONS IN THE BRITISH ISLES.¹

BY WALTER HARRISON, L.D.S. (ENG.), D.M.D. (HARV.), BRIGHTON,
ENGLAND.²

It is a little difficult to write upon a political subject to be of international interest, and as it occurred to me that many of the members might be in doubt as to the mode of registration in this country, I thought a few lines might prove of value.

After the Dentist's Bill became an act in 1878, the administration of the same was handed over to the Medical Council. This council is practically a parliament in itself, and consists of three groups of members,—those elected by the medical profession by vote, those chosen by the various universities, colleges of physicians, and colleges of surgeons, and those appointed by the Privy Council. The dental profession has never had a representative *direct*. Mr. Charles Tomes, M.A. (Oxon.), F.R.S., F.R.C.S., L.D.S., author of "Comparative Dental Anatomy," etc., one of our most learned and highly esteemed dental surgeons, was appointed by the Privy Council, so, although we have one of the most able men possible to plead our cause, we cannot say we elected him to the position.

¹ Read before the Harvard Dental Alumni Association, June 23, 1902.

² President-elect of the British Dental Association.

REGISTRATION AS A STUDENT.

The applicant must present a certificate of having passed a recognized preliminary examination consisting of English, arithmetic, Euclid, algebra, and Latin

He must also present a certificate from a registered dentist stating that he (or she) has commenced his study in dental mechanics, or from a recognized teacher of one of the various dental schools.

The majority of students select a private practitioner to obtain the benefit of his experience; but recently most of the schools have instituted a proper course of study in dental mechanics, and we now watch with great interest which course of study will prove the more useful to the future dentist. Each system has its advocates, but those whose homes are in the smaller towns, where no school exists, would be at a great disadvantage in time and cost, and most young men commence their studies at the age of sixteen or seventeen.

The course of study for the L.D.S. at all the colleges of surgeons is practically the same, and the period is identical,—viz., four years. Three years must be spent in acquiring the details of mechanical dentistry, and two years operative dentistry and general surgical and medical knowledge, making in all five years, although the authorities only require four. Those who reside in cities where a school exists can, of course, arrange their studies in the four.

REGISTRATION AS A DENTIST.

Having attended all the lectures, demonstration hospital practice, and passed the various class examinations to the satisfaction of the staff of the dental school, the candidate presents himself at one of the colleges, and when he has satisfied the examiners of that body he obtains the diploma of L.D.S. (the examination is divided into three parts; see various Calendars), Licentiate of Dental Surgery. On presenting that diploma at the office of the Medical Council, and on payment of the fee of £5 his name is placed on the Dentists' Register. (See clause, Dentist's Act, on front of Register.)

The following are the authorities that grant the L.D.S.: Royal College of Surgeons, England; Royal College of Surgeons, Edinburgh; Royal College of Surgeons, Ireland; Royal College of Surgeons, Dublin; Faculty of Physicians and Surgeons, Glasgow.

The University of Birmingham, the youngest of our universities, and based upon American lines, grants degrees in dental surgery, B.D.S., M.D.S., but these degrees do not admit of registration at present. One is waiting to see what the value of the degree may be. A fair percentage of dentists take up what is called the conjoint diploma, M.R.C.S. and L.R.C.P., and a few a degree in medicine and surgery which can be added to the Dentists' Register, five shillings, as an additional qualification.

A registered medical practitioner can practise dental surgery, but cannot be registered in the Dentists' Register unless he possess the L.D.S. diploma. The conditions to qualify for such are the same as for dental students, with the exception that he is required to spend *two* years in the study of dental mechanics.

I have enclosed a copy of the Dental Register and also the various schools which contain the requirements of the various colleges of surgeons.

The L.D.S. diploma includes what you demand as the State examination, which I think a decided advantage over the American system, making one set of examinations to include the British empire.

American diplomas are not now registered by the Medical Council.

There is a slight contention between the Medical Council and some of the colleges as to the recognition of various schools (each claiming the right to power) for chemical and biological study at local technical schools.

The Medical Council has exercised the power of removing names from the register for unprofessional conduct, but the working of the act is outside the limit of these notes.

OUR SAYINGS.¹

BY CHARLES A. BRACKETT, D.M.D., NEWPORT, R. I.

IT is a very simple paper which I bring before you this morning. If its few commonplaces are such as the older and more experienced among you may generally approve, and if they make any useful or

¹ Read before the Harvard Dental Alumni Association, June 23, 1902.

helpful suggestion to any of the younger and less experienced, its object will have been accomplished.

“Out of the fulness of the heart the mouth speaketh,” and speech constitutes so large a part of all communication between human beings, that our sayings are of great consequence. What people say to us interests us, amuses us, instructs us, raises our spirits, stimulates our ambition, rouses our courage, moderates our enthusiasm, excites our anger, inspires and cultivates friendship, makes us miserable or fills us with happiness. What people say of us makes or mars that good name which is rather to be chosen than great riches.

The sayings of every person, from the youngest child whose prattlings give joy to the mother's heart, up through all the gradations of years and experience and through all the affairs and relations of life, are of consequence. Of special importance are the expressions of those to whom others go for any sort of advice or help in any of their concerns. Within this category stands the dentist, and we should always seek to have our expressions to our patients governed by a wise discretion. Those who come to us should always be able to see in us cheerfulness and cheeriness, frankness, sincerity, uprightness, and the desire to serve. Both self-respect and modesty should be apparent. Compliance and firmness have each their place. We should be chary of promises, and yet be possessed of that self-confidence which knows what it can do. Beyond saying hopefully that we will try, there should seldom be advance assurance of what we will do. Let the thing done be the declaration. When we are in fault, as every one must sometimes be, a readiness to acknowledge it and take our share of blame is always the best way out. We would better have our ability questioned than our honesty. Never tell any one that an operation will not hurt when you have reason to believe that it will hurt. Never deceive a child, nor permit any one, parent or otherwise, who accompanies it to make untrue statements to it while it sits in your chair. Distrust in a child from former experience is a most pitiful thing to see; while one cannot fail to have great gratification in the submission and co-operation, under painful procedures, of a good child who has always found that it could rely implicitly upon what it was told.

Few patients come to our chairs without some feelings of trepidation. Often there is reason for dreading our inflictions; but there are many instances in which the apprehension is not well

founded. Either the operations will not hurt, or they may be so palliated that they will be quite bearable. Remembering the shrinking which we, ourselves, have from being hurt, we should strive both to make our inflictions upon others as light as thoroughness of work will permit, and to do all that we can to set aside needless apprehension. Before we begin the work and during its progress we may do and say much to disarm apprehension, and to cheer and encourage against timorousness. And we should not only say things, but in our tone and manner we should make it apparent beyond question to the patient that we sincerely sympathize, and that we are not inflicting and will not inflict any hurts that we can reasonably avoid.

The dentist especially needs self-control. He needs it himself for his own sake in order that he may maintain his mental balance and work to the best advantage, and he needs it again because often his control must supply the place of the patient's self-control. Real self-control is, of course, largely a matter of temperament, but it is also largely a matter of cultivation. Numbers of people remarkable for their equanimity and mildness of expression were by nature very different, and they have attained their graces through persistent effort. It is a great help under exasperating circumstances to cultivate the habit of hesitancy of speech, and of speaking in a tone lower, or at least not higher, than usual. One should seek to frame one's sentences so that it cannot be charged by the other party that they contain untruth, inaccuracy, exaggeration, or misrepresentation. It is good practice in self-control never to use exclamations or expletives under any circumstances. Mishaps, accidents, surprises, failures, alarms, shocks, of little or of much consequence, come to us. Under such circumstances many people make exclamatory expressions practically involuntarily. It is with them simply a habit. With a little attention and effort one may form the infinitely better and, for the dentist, far more becoming habit of being silent, whatever happens, until a rational sentence can be formulated.

The dentist should be very careful in all his expressions concerning others. Never let it be said that your office is a good place to get the news. Seldom introduce a personal topic of conversation, and then only to commend something which is good and worthy. Ascribe to others good intent and right motives; make allowances for mistakes, misunderstandings, and misapprehensions. Do not

mind trifles. Cultivate a broad-mindedness and a high-mindedness. Observing these things, your judgment of your fellows is more likely to be a just judgment than if you were governed by a meaner spirit. With the right spirit, we shall find but most rarely in the work of any other practitioner anything to condemn or even to pass over in silence; but we shall find all along the way multitudes of instances for commendation.

Do not talk too much. In a particular community a lady of wealth and prominence entered a store. A salesman, who knew her face but was utterly unknown to her, came forward and greeted her effusively. "Good-morning, Mrs. So-and-So. It's a fine morning this morning. I was pleased to see you at the opera last evening." The lady put on her eye-glasses, looked him up and down, and said, "Young man, I came here to buy a carpet."

Some of our patients come to us to have a tooth filled. Undivided diligence in filling the tooth is what is desired. Above all, do not burden others with any of your own cares or trials. Before you say anything question if saying it will serve any good and useful purpose or make anybody really wiser, better, or happier. No one is benefited by having you retail that you did not sleep last night, or that mosquitoes have bitten you, or that you have dyspepsia, or that the cook has left and the plumber did not come. First, do not have troubles; second, when you have troubles, do not mind them; third, when you mind them, do not talk about them.

Do not talk too little. We all of us have many patients whose satisfaction in their calls upon us is much helped by our cheery sociability, many whom we can interest and advise, encourage and comfort. I have just intimated that we should not ordinarily make our own cares subjects of conversation. With equal earnestness I would say that we should be ever ready to listen to the troubles of others, and alert to be as helpful as we can to every one who is really in need of such cheer and comfort as we can give.

A lamentable case of inconsiderate cruelty of expression was under these circumstances; a skilled and careful dental practitioner had been nursing along for some time a case of disease in the mouth which he recognized as malignant. The patient was very ill, but neither he nor any of his friends had knowledge of the grave significance of his malady. If I remember rightly, the patient's wife was of an hysterical temperament and a victim of heart disease, which made anything of a mental shock a great risk for her. One

day when the patient and his wife were in the office, the attending practitioner had a call from another dentist whom he politely asked to see the case. At the first glance the visitor blurted out, in a voice to be heard through consulting- and waiting-rooms, "Well, I don't know what you think about it, but I think that is a cancer." The drop had fallen; and the harm done by the inconsiderate expression could never be repaired.

To offset this I may give you some more kindly instances. A gentleman, now past eighty years of age, has for a long time at annual examinations pointed out a buccal filling in a right lower second molar as having been made when he was twenty-six. Really his present dentist refilled the cavity a dozen years ago, but he is quite content that the old time service should have the credit.

Nothing in the way of faith could be more implicit than one elderly lady's confidence in mutton tallow as a panacea for every sort of a toothache. In her case the most intense odontalgia yields at once to a free inunction upon the gum. Some of her friends have hard work to accept and use her remedy; but her dental adviser only expresses rejoicing that she has such a ready and effective resource.

In the beginning of my practice an estimable old lady, long since now of blessed memory, came in wearing a partial lower plate with two ordinary porcelain central incisors attached. She told me of her long-cherished and deep-seated repugnance to wearing artificial teeth, and of how, when her own teeth had dropped out, her dentist had taken them and mounted them on the plate, and she had such satisfaction in wearing them. He would have been a black-hearted wretch who would have destroyed the sweet illusion.

You will note that the writer draws a line of distinction between wilfully deceiving, and permitting others to hold opinions to which they are entitled.

In our interviews with our patients, then, discretion, tact, honesty of purpose, and kindness of heart should govern our sayings.

Reviews of Dental Literature.

SOME METHODS OF PREPARING TEETH FOR HISTOLOGICAL EXAMINATION. By A. P. Beddard, M.D, and E. I. Spriggs, M.D., Gull Research Student.¹

The object of this short paper is to lay before the Society our experience with certain histological methods, and especially those suitable for class purposes. Our attention has been mainly directed towards trying to find the best method of preparing sections of the hard and soft tissues together by decalcification, for it is clear that any method of grinding down the hard and soft tissues together entails not only great labor and waste of material, but also the fundamental objection that most of the sections so obtained are, from a histological point of view, inordinately thick. Every one who has to prepare a large number of sections for a class knows that it is easy by almost any method to produce an occasional good lot of sections, but when a large number of satisfactory sections are wanted the methods adopted require careful selection. The chief method, then, we wish to mention is the one we have used for two years to prepare sections of the hard and soft tissues together by decalcification.

The whole problem of decalcification, whether it be of bone, corals, sponges, or teeth, is to find a decalcifying fluid of such a nature that, after proper fixation of the tissues, it will abstract the lime salts without doing any damage to the soft tissues. In choosing a decalcifying fluid, therefore, it is necessary to have some criterion of whether the soft tissues have or have not been injured. In extreme cases of damage by acids the soft tissues may refuse to stain at all. The most beautiful looking section of a decalcified tooth we have seen was produced by decalcifying with strong nitric acid and phloroglucin; decalcification was complete in half an hour. Unstained the sections looked nearly perfect, but they obstinately refused to stain. This is an extreme case.

The real criterion of whether the soft tissue has been injured during decalcification is the condition of the nucleus as seen when

¹ Demonstrators of Physiology and Dental Histology, Guy's Hospital.

stained by a basic stain, such as hæmatoxylin. If uninjured a normal, darkly stained nuclear net-work is seen within the nucleus; when injured to the slightest extent no such nuclear net-work is visible, the nucleus staining a uniform blue color.

Taking this as the criterion of a decalcifying fluid, we have tried a number of the published formulæ and have found, as others have done, that mineral acids in water, although rapid in action, damage the soft tissues to a greater or less extent. Numerous formulæ containing additions of phloroglucin, alum, or sodium chloride have been suggested in order to counteract this action of the acid, but we have found them to give most uncertain results.

The fluid which we have found most satisfactory is a mixture of nitric acid in alcohol. This fluid, if properly used, gives uniformly good results. The method we have adopted is to saw the tooth in half and then thoroughly fix it in either perchloride of mercury or formalin. With perchloride of mercury we have used a saturated watery solution acidified with one per cent. glacial acetic acid. In this it remains three days. The mercury is thoroughly washed out in frequent changes of seventy per cent. spirit (which gives better results than washing out in water), and is then transferred to ninety-five per cent. spirit for one week.

With formalin we have used a ten per cent. solution in water. In this the tooth remains at least a week, but it may remain much longer without harm. The formalin is washed out in running water and the tooth is passed through seventy per cent. spirit for two days, to ninety-five per cent. spirit for one week. A thorough fixation and hardening with some fixative agent and alcohol is essential before decalcification. From the ninety-five per cent. spirit the tooth is transferred to a mixture of five per cent. white nitric acid in ninety-five per cent. spirit. This fluid was suggested and used by Mayer many years ago for the decalcification of bone. It has to be changed every day,—this is essential to its success,—and, further, it must be freshly prepared every time it is used, for the acid rapidly oxidizes the alcohol. At the end of about a week all the enamel will have been removed. The process is continued for another week; at the end of that time the tooth will be nearly decalcified, but the dentine remains so hard that it is difficult to cut it with a knife.

At the end of this fortnight the tooth is transferred to a

mixture of three per cent. white nitric acid in seventy per cent. alcohol. The originator of this mixture is unknown; it has been used for the decalcification of bone, and we obtained the formula from Bolles Lee's "Microtometist's Vade Mecum." In this fluid the dentine rapidly softens, and as soon as a needle can be easily pushed through it decalcification is complete; this will be at the end of one or more days. As a matter of fact, it is unnecessary and much better not to push needles into the tooth to test how the decalcification is progressing. In this fluid it can be seen that the tooth becomes increasingly translucent from without inward, and a very little experience soon tells one at a glance when that process has been completed.

The next step is to get rid of the acid. Rapid neutralization of the acid by lithium carbonate or any other similar salt is certainly a mistake: the rapid liberation of bubbles of gas within the soft tissues is liable to tear and destroy fine fibrils. A better method is to place the pieces of tooth in running tap-water for a day; even better results are obtained by washing out the acid in frequent changes of seventy per cent. spirit until the fluid remains neutral to litmus.

Another excellent decalcifying fluid is thirty-three per cent. pure formic acid in water. We do not know who originally suggested it, but we obtained the formula from Dr. Römer, of Strassburg. Formic acid being itself a fixative agent of considerable power does not, even in strong solutions, tend to gelatinize and damage the tissues as do mineral acids in water. The results obtained by this fluid are quite as good as, if not slightly better than, those with nitric acid in alcohol, and in some ways this fluid is the more convenient, as it is more rapid, taking about fourteen days, and does not need to be changed more than once or twice. The acid is got rid of by placing the tooth in running tap-water for a day.

Embedding is the next process to be considered. There is a choice of three media,—paraffin, gum, and celloidin.

We have tried paraffin, and found that it is impossible to cut decalcified adult teeth in it, owing to the extreme hardness which the dentine assumes during the process of embedding.

Gum is the simplest medium, but it is uncertain and not wholly suitable for class purposes, for when thin sections of about ten microns in thickness of hard and soft tissues together are required,

unless the embedding be perfect the hard tissues in the process of cutting tear away from the soft tissues. It is true that gum when frozen to exactly the right hardness is an excellent embedding medium and allows good sections to be cut, but it is difficult in practice to keep gum frozen to exactly the right point for a sufficient time to allow several hundred sections to be cut at once. If the gum be too hard, thin sections curl up badly; if too soft, the embedding is imperfect and the soft tissues are torn. Further, when the gum has been dissolved out the soft tissues are unsupported and easily torn by an inexperienced student in the process of staining and mounting.

Embedding in celloidin gets over all these difficulties, and the results obtained well compensate for the extra time and trouble.

We only touch upon the subject of cutting the bits of decalcified teeth embedded in celloidin in order to mention the Delépine freezing microtome to any who are unacquainted with its merits. It is only the excellence of this microtome which makes the cutting of sections in celloidin for a whole class possible. It is automatic, and enables sections of any desired thickness up to forty microns to be cut at a rate of several hundred in a few minutes,—in fact, enough to last any ordinary class for years.

In order to prepare the celloidin embedded material for cutting in gum it is necessary to get rid of the eighty per cent. spirit in which the celloidin has been hardened by placing the bits of teeth in running water for twenty-four hours. They are then placed for another day in a mixture of gum and syrup (Cole, quoted by Bolles Lee, *loc. cit.*):

Gum mucilage, B.P., 5 parts;

Syrup (1 lb. loaf sugar in Oi boiling water), 3 parts;

Carbolic acid, gr. 5 to ʒi. of medium;

and, just before cutting, a piece is taken out of this, wiped, and frozen in gum without sugar. For class purposes we cut all our sections ten microns thick, which is as thin as an ordinary paraffin section of a soft tissue. By this method and with this instrument, however, sections of only six microns thick can be cut when required, as for the study of bacteria in the hard and soft tissues.

When cut the sections are placed in water to dissolve out the gum, and then into bottles containing eighty per cent. spirit, in which they will keep indefinitely and can be given out as required.

There is only one other point with regard to these celloidin sections which we wish to mention, and we do so because until we found the solution of the difficulty it caused us much trouble. The point is that celloidin sections of teeth take a long time to dehydrate perfectly in absolute alcohol. If the student imperfectly dehydrates the section—and he may easily do it—and then places it into a clearing agent such as xylol, the section becomes permanently wrinkled and is spoilt. The same is true, though to a less extent, of other clearing agents, such as oil of cedar-wood or oil of bergamot. The solution of the difficulty is to be found in a clearing mixture suggested by Weigert, which consists of three parts xylol to one part of white anhydrous crystalline carboic acid. The carboic acid in the mixture will take up large quantities of water, and sections out of ordinary methylated spirit are almost instantly cleared without any danger of wrinkling. In using this fluid it is necessary to remember that it cannot be used for sections stained by basic aniline dyes such as fuchsin, methylene blue, and thionin blue, because it rapidly decolorizes them. When these basic dyes have been used, as in staining for bacteria, the sections are best cleared in aniline oil, and then in a mixture of one part of aniline oil in three parts of xylol.

Another method which we wish to mention is the one we have found most useful in preparing decalcified sections of the hard and soft tissues together, in order to demonstrate the distribution of bacteria in them. The difficulty has been to find a decalcifying fluid which does not in any way impair the staining properties of bacteria, and this, we think, we have found in trichloroacetic acid. It is well known that bacteria after exposure to the action of mineral acids stain badly; and even the addition of alcohol to the acid does not wholly prevent this. A ten per cent. solution of trichloroacetic acid in water has long been used in physiology as a precipitant of proteids; in other words, it is a fixative agent of considerable power, and when we found that its calcium salt was soluble, we tried it as a decalcifying agent. Judged as a general decalcifying agent by its effect upon the staining properties of the nuclei in the soft tissues, the results are slightly inferior to those obtained with either formic acid or nitric acid and alcohol. But from the point of view of the bacteria, trichloroacetic acid leaves nothing to be desired.

The method we have adopted is as follows: The tooth is sawed

across and fixed in perchloride of mercury or formalin, and hardened in alcohol just as before. It is then transferred to a five per cent. solution of trichloroacetic acid in water. This is the best strength to use; damage to the soft tissues is minimal, and decalcification is sufficiently rapid. In about a week the tooth becomes almost as flexible as a piece of india-rubber, and decalcification is complete. The fluid has to be changed once or twice, but it need not be freshly prepared. The acid is washed out in running tap-water, and the teeth are embedded in celloidin, and set in gum as before.

In order to obtain the best results, the section should not be more than six microns thick; but even with a Delépine microtome it is difficult to cut a large number of whole sections as thin as this, and for class purposes a thickness of ten microns is sufficiently thin. Before staining, but after the gum has been washed out in water, it is well to place the sections in methylated spirit for some hours; for some reason this greatly improves the staining properties of the bacteria.

There are other methods which we might mention, but we think we shall have trespassed upon your patience sufficiently long. With regard to the sections under the microscopes, it is only fair to them and to the methods by which they have been produced to state that they are not specimens prepared with any special care. They are in all cases taken from the bottles of sections cut for a class, and therefore represent simply the average result which may be expected. We do not doubt that if special care were given to the preparation of any given specimen, these methods could yield still better results.—*Transactions of the Odontological Society of Great Britain.*

Reports of Society Meetings.

AMERICAN ACADEMY OF DENTAL SCIENCE.

THE regular monthly meeting of the Academy was held at Young's Hotel, Boston, on Wednesday evening, April 2, 1902, at six o'clock, President Bradley in the chair.

President Bradley.—An opportunity will be given to the Fel-

lows of the Academy to present specimens of office practice at this time.

Dr. Hopkins.—This is not an incident of office practice. It is something that I have been using as a styptic, and I thought others might possibly have use for it. It is the active principle of the suprarenal gland in a normal salt solution, one to a thousand, and as a styptic it seems to be of considerable value in those cases where a rubber dam cannot be supplied; and where you are working down to the gum margin it really seems to be effective without scarifying the gum in any way, or leaving any sort of a slough. I have had a good deal of difficulty in getting any literature on the subject. I have written to the manufacturers, and have not heard from them as yet, and I cannot get any information here, so that I cannot tell in what liberal quantities this may be used. So far I have been a little cautious in protecting the mouth, but as the use of the suprarenal gland is that of a cardiac stimulant, it is likely that it will not do harm if used in any moderate quantities. Adrenalin is the name of the preparation, and it is prepared by Parke, Davis & Co.

Dr. Ames.—I have something here that may be of interest to the Fellows. It is a set of teeth made entirely of porcelain, that a lady had made by Dr. Scarboro, of New Jersey, and she has worn it twenty-six years. I will pass it around.

President Bradley.—Is this on a porcelain base?

Dr. Ames.—It is all porcelain. It has been worn twenty-six years.

Dr. Andrews.—I have a case for which I would like advice. A lady patient came to me and stated that her sister, an invalid, has been suffering at times from scalding pains in her mouth. The sensation is as though the mouth was burning. I have not seen the patient. The lady who called asked me if it were possible to help her sister. She has been under medical care without any relief whatever. They tell her it is probably a nervous trouble. I asked my patient if she would kindly write her sister's symptoms, and she wrote the following, which, with your permission, I will read.

“The trouble in my sister's mouth began as far back as 1857, but was not then nearly as painful as of late years, and now not equally painful at all times, sympathizing, apparently, with her nervous condition. The tongue and gums are often very red, sore and sensitive. The sensation is of red-hot coals in the mouth.

Acids, as in certain fruits, seem to aggravate the stinging and burning sensations, which my sister often says is enough to make her ill of itself."

I shall be glad to know of a remedy. I had a patient, an old lady, some years ago, who had trouble of this nature. There was very little that I could do to relieve it. Her symptoms were reddish, swollen gums, and a sensation as though they were burning. What I would like to inquire is, have any of our members had such cases, and, if so, what treatment was pursued?

Dr. Cooke.—Are the teeth present?

Dr. Andrews.—Some of them.

President Bradley.—Is there any other suggestion in regard to this matter?

Dr. Andrews.—Dr. Fillebrown said he had a case that he cured by hypnotism.

Dr. Cooke.—On that line, I do not know whether it would do any good in this case or not, but I had a patient in to-day whom I see frequently in regard to pyorrhoea trouble. She had been using during the last year precipitated chalk to pack around her teeth at night, and it has kept the trouble down a great deal, and the mouth seems to be in a great deal healthier condition than when that was not used.

I want to pass around a few models. This shows the bad results from extraction of the second temporary molars, and the six-year molars have moved forward. And also the temporary cuspids have been taken out.

President Bradley.—Is there any other item of interest that could be presented at this time?

Dr. Cooke.—I have a crown here, Mr. President, that I am going to talk about by and by, and I will pass it around. It was worn five years. A clasp went around this and held a plate up. It had a post crown on it before. It is a very poorly fitting band, and it is surprising that it stayed in a mouth. I made it.

President Bradley.—I believe Dr. Hopkins has an article that he would be willing to read to the Academy at this time, if the Fellows would please give it their attention.

Dr. Hopkins.—This is a very long and interesting article, on the subject of the variation in the power and composition of saliva, which was published in the *American Journal of Physiology* in 1898, and the summary may be interesting, and will only take two minutes to read. (Reads.)

Dr. Werner.—I think that is very interesting, and I want to ask the definition of amyolytic.

Dr. Hopkins.—Power to digest starch.

President Bradley.—I have the pleasure of introducing to you Dr. Horatio C. Meriam, D.M.D., who will read his paper on "Some Uses for English Tube-Teeth."

(For Dr. Meriam's paper, see page 1.)

President Bradley.—Dr. Meriam is going to pass around the specimens that he has spoken of. We have all been extremely interested in the complete demonstration of the subject which Dr. Meriam has presented to us this evening. It is, I am sure, prolific of discussion, which is to be opened by Dr. Cooke, according to the programme on the announcement card.

DISCUSSION.

Dr. Cooke.—Mr. President, I cannot expect to compete with this exhibit, as I think it will attract attention and I shall not be heard.

I have used these English tube-teeth in a good many ways. I think there is one decided objection to them, and that is the material out of which they are made. It is very nice to be able to grind them down and polish them up, but the material is so soft that they are not strong enough for the cases in which I want them, and the teeth are very liable to split. If we could have a tooth made the same way, but hard, I think it would be a great deal better.

Then again, Dr. Meriam did not speak of their use in plates. I had a patient who came from England, where they have used this type of tooth very successfully. This was a partial case where the molars and bicuspid were put on by means of the tube-teeth on a plate. I had one case which was not made of gold, but of dental alloy, which is a good deal cheaper than gold. I had one case that I sent down to one of the dental laboratories to have a tooth ground on, and they kept a man on it all day, and then sent it back partly done, saying they did not want another job of that kind. It is a very easy thing to grind the teeth in a case of that sort if you only go at it right.

This was a case of a lower partial plate, there being two bicuspid and two molars, and this would be a cross-section of this portion (illustrating on the board). When you come to put on

your teeth, grind them first about where you want them to go and then put your pin in the plate, and it is quite easy to grind the teeth in place. But if you try to do it the other way, it is a long, hard job and liable to be unsatisfactory.

Whether you make a tooth of your English tube-teeth, or whether you make a case of your regular carved tooth and solder your backings on, as we ordinarily do, I should use sulphur for filling around between this part and the gold. It will make a clean case. We all know when teeth are cut off of a plate there is a lot of material between the teeth and the plate. Pour your sulphur all around into your joint when the tooth is ground to fit the plate. That is one of the best uses of sulphur, and it does very nicely in these cases.

Another thing, these teeth will wear well on a plate and will not crack, where, when you come to a crown it is entirely different. For the front teeth I do not like them,—*i.e.*, the upper six teeth, the anterior teeth; I do not care for the shape of them. I have used them for bicuspid, and in the case I passed around they look very well in the mouth. I could not tell how long that root was, and the patient had had a crown, and this clasp went around the tooth and held it in position. That is an advantage where you use a clasp. Where you put an all metal crown on and then a clasp, you are going to have wearing of your crown.

Then, in regard to the use of a post, I do not think it is necessary to use a post in these cases. I simply put on a band with a top to it, and do not use a post, and they do not come off. I have had one or two cases of fracture. I remember one or two cases where the sulphur has failed,—*i.e.*, where the tooth has loosened from the post on account of the sulphur giving way. It is a very easy thing to put those on. I used to take the top of a tin box, or something of that sort, to put the sulphur in, but it soon turned very dark; and then I procured a little porcelain saucer, and the sulphur retained its color. In getting the relations of the crowns, for instance, I put gold right across the end of the band, try my crown in the mouth to see just where it wants to go, and take an impression of that crown in the general relation. In some cases your crown will not be large enough. In those cases, after you have fitted your crown, take a little of the low-fusing porcelain and make it fit, and round it down in nice shape.

It is possible to take a crown, scratching it where the post

should go, put your post on, and solder your post. It is a good deal easier to carry your post directly through the top of the gold cap and then solder it, and cut off the top of your post if you do not wish to use the post in the root.

Dr. Meriam had a space left between the porcelain and the root. I think the more space you have between the porcelain and the end of the root, the worse you are off. I think in using the cement it is just as it is in the inlay,—the less cement you have between the porcelain and the root the better. If you can have a tight joint there, and have the least possible quantity of cement, so much the better. Also the less space you have around your post in fitting the root-canals the better.

As for the grinding out on the end of the headed pin, I do not think that amounts to much. The more you grind, the more you weaken your porcelain, and I do not believe a patient can tell whether it is gold or the regular metal of the pin.

As to the thickness of the band, I have used the ordinary 29, 30, or 31 coin gold rolled down, and I have not had any trouble with the crowns failing on that account. For the grinding surface, of course, it is a fact that you get a good deal better grinding surface with the porcelain than with gold.

President Bradley.—The subject is still open for discussion, and we should be glad to hear from any others, our guests as well, or any other member of the Academy.

Dr. Werner.—Mr. President, the subject is so large, so many things presented, if I say anything it will be in regard to Dr. Meriam's extension crowns. Since he has shown before the Academy several practical cases, I have tried it, and to me it is a satisfactory and practical operation.

I do believe in having the teeth carved. I never put one on yet where I did not have the tooth carved, with two pins and a saddle, and they have been so far very satisfactory; they are clean. I do not see the slightest objection to the saddle. I do not think it is necessary to mark on the black-board what I mean by the saddle, but perhaps it is just as well.

The first case I ever did after Dr. Meriam's style was a lateral incisor, and I went back for anchorage to the first molar; the second bicuspid, the first bicuspid, and the cuspid were in place. This was not a carved tooth, but a rubber-plate tooth, and had no saddle. Many times I prefer a rubber-plate tooth to a gold-plate

tooth. That molar was not trimmed, not even a polishing strip or sand-paper disk, but was thoroughly clean. I took a plaster impression, fitted the band on the buccal side about one-sixth the width of the crown, and on the palatal side covered the crown from the bulging part to the cutting edge. The band on the inside was wide; on the outside it was rounded, thick, and narrow.

I do not like bands near the gum. There is a good deal of spring where the extension arm is from the molar to the lateral incisor, and it should be of platinized gold, half-round, and resting firmly on the gum.

My second case was a first bicuspid. I also had the first molar as anchorage. The bicuspid crown was carved with a distinct saddle, and that went on without the least trimming of the first molar tooth; the band was driven on, and it fitted. This, which I call the Meriam extension crown, is a very practical application.

We should all remember the necessity of contouring, whatever crown or whatever kind or method of crown we use. I think it essential to have a proper contour. If you have that properly done, a good many minor things, that will afterwards turn out large things, will be avoided, such as cleanliness, comfort, and proper enunciation. I think proper contour in all crowns a very essential thing.

Adjourned.

CHARLES H. TAFT.

Editor American Academy of Dental Science.

AMERICAN MEDICAL ASSOCIATION. SECTION ON STOMATOLOGY.

(Continued from Vol. XXIII., page 927.)

Final Session, Thursday Afternoon, June 12, 1902.

THE meeting was called to order by the Chairman, Dr. A. H. Peck.

A paper entitled "The Legal Status of the Term 'Reputable as applied to Dental Colleges'" was read by Dr. Charles C. Chittenden, D.D.S., of Madison, Wis.

(For Dr. Chittenden's paper, see Vol. XXIII., page 581.)

DISCUSSION.

Dr. G. V. I. Brown.—It is important for us to know that this is the first time that we have been able to take up the discussion of the legislation of the dental curriculum and such changes as we desired to have made for the advancement of the profession with a certainty that we could carry them out. The term “reputable” is now defined to mean a standard which is in accordance with the standard of the best institutions. That, too, might be extended to imply that a proper curriculum is one in accordance with what is laid down by those best versed in the educational needs of dental colleges. It seems to me now like opening a vista before us in the work to be done and which this Section has been interested in for so many years. We now come to the consideration of what branches should be taught, how much and how little; what is best adapted to the need of a dentist from the stand-point of the artisan purely, and in order to rank among the professional men of the world as this Section would have him do, taking his rightful place in the rank of medical practitioners. It seems to me that it is a very beautiful thing to receive this crowning of the labors of Dr. Chittenden and of the other gentlemen who have carried on the work of the Section with high ideals, and to know that these aims are in a fair way to be consummated.

Dr. M. L. Rhein.—I feel that all of the profession are indebted to Dr. Chittenden for the work of bringing this matter to such a magnificent consummation in his own State. One of the things we have been striving for in our State is to get a unity of understanding so that the bearer of a license to practise in one State could practise in another. We hope that the present interchange of right to practise may extend to other States. It is an unwarranted hardship to ask a man who has been practising for some years to pass the ordinary examination. However, it would be folly for us to take into some of our States practitioners with the indorsement of some of the boards of examiners.

Dr. A. E. Baldwin.—I am glad that Dr. Chittenden has been able to present this paper to us and to the profession at large through the *Journal of the American Medical Association* and the *INTERNATIONAL DENTAL JOURNAL*, because it is a move in the direction of higher standards, higher education, and broader qualifications. To my mind it marks an epoch which will be more

readily recognized in the future. It seems to me that this so-called reciprocity in professional work should obtain. It is in every way reasonable and equitable, and, once established, I believe it will do more for the elevation of dentistry than any other one thing. I feel that I can heartily endorse the tribute of Dr. Brown to Dr. Chittenden. For fear of it being misunderstood by the readers of this paper, I want to say that I do not think this decision of the Supreme Court of Wisconsin was qualified in any way by the personal opinion of the Supreme Court judge for Dr. Chittenden. I do not think that was the meaning of Dr. Rhein. The decision of the court will be even more far-reaching than is perhaps now realized.

Dr. Rhein.—I trust that my remarks did not bear the interpretation suggested by Dr. Baldwin. I meant that the record of our specialty coming through such a man as Dr. Chittenden proved that we are in a position to receive such a decision.

I would like to say, in regard to the troubles in Germany last year, and which were taken up by our Consul, that in returning last summer from Germany one of our passengers was Professor Andrew D. White, one of our ambassadors to Germany. It was a matter to me of great delight to see the interest taken in our specialty by Professor White, and, desiring to send a message to those interested in this work in America, he said he wanted us to know that in anything in the nature of international complications he placed himself at our disposal, and wanted us to feel that we would have perfect access to him in such matters as had come up last year.

Dr. Talbot.—It seems to me that if the State boards adopt the law as explained by Dr. Chittenden, they have an immense power to wield in regard to dental colleges. The word "reputable," and in another clause "the burden of proof placed upon the graduate as to the reputability of the college," covered the ground very nicely. It relieves the State boards of a great deal of hard work and at the same time gives them the ability to maintain high standards. In taking this position the judges seemed to have insight of the conditions and affairs, and have made it plain that any State board with the least amount of ability could place their board in a position to command the respect of all the colleges in the country.

Dr. Brown.—As a matter of fact, reciprocity is a possible, and can easily be an actual, fact. I do not suppose any of you will

remember the Chairman's Address which I read at Columbus, but in that I outlined the possibility of an arrangement whereby all individual boards can be guided and supervised by the National body, and I made the statement that though the individual board might be mercenary and ignorant, and sometimes the result of political appointment, the selected board from the best representatives of all of the boards of the United States would be as nearly fair and honorable as would be possible to secure. The board of Wisconsin has made all that possible. Under the direction of their attorney the Supreme Court prepared for these their own rules. Instead of being guided by the National body they have adopted as their rules certain rules and regulations based upon the rules of this Association. Under the decision of that court they can require just exactly whatever the rule is, and as they see fit can raise the standard. The board is a judicial body, and in the exercise of its proper powers cannot be overruled. If the different boards choose to adopt similar rules and regulations, under these rules the standard is at once uniform and it is possible for men to go from one State to another without being harassed by examinations. On the other hand, it takes away the possibility of having a too haphazard method.

A part of our work for the future should be to prepare a way for the proper education of the dental student, for a wider medical education, and for his full recognition as a reputable dental practitioner.

Dr. Williams.—If we can get good men on the State examining boards there will be no difficulty, but in some States the boards are ruled by politics. I think it is quite proper that the examining boards should have the legal power if they are well qualified and honest men.

Dr. A. H. Peck.—The subject has been so entirely covered that I will simply say this, because I am anxious to go on record before the dental world and before the medical world as one who is in favor of everything which tends to uplift our profession. This has been my sentiment for years, and I am exceedingly glad that we have one man who has been on a State board of dental examiners for years, who has given the best part of his energy to the consummation of some plan as a standard for the future. Dr. Chittenden is the man, and he has given us to-day a careful *résumé* of the laws of the various States and their attitude towards dentistry.

It is for us to say whether a school is reputable or not. I hope, further, that the power may be placed with them of determining the value or the reputability of a diploma given to a graduate by any institution. Men and women are turned out of our institutions with their diplomas who are not capable or should not come before the world as graduates of any reputable institution. So long as I hold a guiding hand in the affairs of an institution my efforts shall be in this direction,—to uphold every effort of the State boards throughout the country looking to the elevation of the standard of dentistry.

Dr. Eames.—I heartily endorse the statements so far as I have heard them, especially the remarks of the chairman, and, so far as I have looked over the paper, there is a great deal to be done with the State boards themselves, in my opinion, for certainly their methods of examination and questions that they have proposed, whenever they could be ascertained, have been far below what I should term a reputable standard.

Any further word that I might say would simply, if possible, make emphatic the suggestion of the unification of these laws and standards. When the standards of examiners shall be in unison, then it seems to me it would be a very easy matter to enact a law which shall conform to them.

Dr. Baldwin.—If it would be in order, it seems to me it would be proper for a resolution of recommendation to go from this Section to the National Board of Dental Examiners requesting, in the name of the Section on Stomatology of the American Medical Association, that they look with favor upon this interpretation given by the Wisconsin Supreme Court.

Dr. Chittenden (closing the discussion).—The difficulty in the past has been that the boards of examiners were antagonized by the schools, and there was a spirit of commercialism in the faculties themselves, and it was only after a serious struggle that it was possible for the examiners to get the colleges themselves to set a definite requirement for admission to their schools. From that point we have gone forward, and the years intervening have brought the two institutions more closely together. Last year the faculties associations recognized that the examining boards were really becoming their friends. The suggestions which I have endeavored to show you are absolutely feasible for the establishment of a national educational standard which may set the pace for the world. It is

understood and known that the State law of New York is the best and of the highest standard in the United States. It has seemed to most men interested in dental matters to be a standard sufficiently high to be sought and chosen as a criterion to which all boards should come. The matter must necessarily move slowly. The boards are scattered throughout all the States of the Union, and it is difficult to get them to co-operate. Once the colleges encourage what I have undertaken to describe, the boards will understand that it is a desirable thing. As soon as the educational standard was permanently established in 1899 commercialism ceased. With the standard as it is, no school can matriculate a man unless he can present credentials acceptable to the State Superintendent of Public Instruction.

I can see no question, Mr. Chairman, that the propositions made in the paper are not absolutely feasible, that they may not be put into action, and in that way enable us to set a standard of dental education for the world.

Dr. A. F. Baldwin, of Chicago, offered the following resolution:

Resolved, That the Stomatological Section of the American Medical Association heartily endorses the decision of the Wisconsin Supreme Court as to the judicial powers of the State board as to the determination of what constitutes "reputability;" and we heartily recommend this decision to the National Association of Dental Examiners as a basis for establishing professional reciprocity in our grand country.

On motion, the resolution was adopted.

Dr. G. V. I. Brown, of Milwaukee, Wis., read a paper entitled "General Nervous Manifestations in Relation to the Jaws and Teeth."

(For Dr. Brown's paper, see Vol. XXIII., page 571.)

DISCUSSION.

Dr. A. E. Baldwin, Chicago.—I have no doubt that we all see cases in which not enough attention is given to obscure functional disturbances. Within the last two months I have had cases in which I have given temporary relief, and in which I hope for considerable permanent relief from following the suggestions of this paper.

Dr. Williams.—We have all seen these cases of grinding of the teeth, but I do not know that I have ever heard the matter so care-

fully analyzed before as to relations and causes. In one case in which the teeth were quite worn by the grinding the patient said he ground his teeth all night. I think Dr. Brown has treated the matter very scientifically.

Dr. Eugene S. Talbot.—I am very much pleased with the paper, for the reason that Dr. Brown has had a large experience with these cases. Every dentist of some years' experience has these cases. The question, however, is, to be able to diagnose them. It is a singular fact that we as dentists have a great many of this class of patients, neurotics and degenerates. We have first the patient with the unbalanced nervous system, and on account of this the conditions mentioned by Dr. Brown develop. He mentioned the fact that the individual has periods of stress in development, which is very true, indeed. It is to a certain extent true that our systems change every seven years; some of the tissues change oftener than that. There are periods in the life of the individual from conception to old age which mark every important epoch in our histories. The first period of stress is at four and one-half months of fetal life. The second is at the eruption of the first set of teeth, and in the life of the child this is the most important period. There is greater difficulty in tiding the child over the period of teething. At this time the alimentary canal is changing. It is while these changes are going on that we have the neurotic or degenerate child. The third stress is at the time of the eruption of the permanent teeth. It comes on at the sixth year and remains until all the teeth have erupted. It is at this period of evolution that the child is going through the stage of puberty. This, then, is another very marked period of the child's life, for at this time we have the deformities of the dentine and irregularities of teeth to look after. It is very important that in the eruption of permanent teeth and in the correction of irregularities we should know something of the nervous system, because every one of these individuals who have deformities of the teeth and jaws are neurotics. The mere fact that they have irregularities of the teeth indicates that. The next period of stress begins at about the twentieth year and lasts three or four years. The next stress is at the forty-fifth year, when the senile change develops. Here many of the conditions spoken of by Dr. Brown commence to develop. We have the peculiar condition which we call pyorrhœa alveolaris. It is at this time that neurasthenia sets in, and it affects these nervous and degenerate people to a

greater extent than normal individuals. Our schools for idiots and the insane asylums will show that nearly every case of these neurotics and degenerates are suffering from decay of the teeth. As the individual goes through life, if he be a neurotic or a degenerate, he is more apt to have these peculiar symptoms of the jaws and teeth as he advances in age.

I have some very interesting cases in the same line and some most remarkable cases that I would like to present, but for want of time I will not do so.

Dr. Rhein.—I do not know of any subject presented to the Section which in its practical application is more valuable to the practitioner than that which Dr. Brown has treated so ably. What pleases me most is the direct attitude of the essayist to revert at once to the cause of the disturbance in finding his remedy. I have had, as has had every one of experience, some such cases. There is nothing more satisfactory in results than the solution of this problem when the cause has been removed. The knowledge as to the proper occlusion of the teeth is the key-note to the correction. I have always given much attention to determine the amount of force upon different teeth in such cases. This involved a consideration of all the motions of the teeth. I have made it a rule to replace every missing tooth in order to equally distribute the occlusive force, and I have a series of cases showing satisfactory results. Personally I have had little success with the soft plates worn at night. I have observed in operative work that there is a general habit of leaving the occlusal portions of the posterior teeth almost devoid of their cusps. This renders the proper performance of function impossible. Another point is that necessity of teaching dental students the meaning of physiological occlusion of the jaws. It is an unfortunate thing that very few dentists understand the physiological occlusion not only of the teeth as a whole, but of individual teeth.

Dr. G. A. Eames.—It seems almost absurd to remind an intelligent dental practitioner that this subject is an important one. I was much interested in it when I heard the paper by Dr. Brown in Philadelphia, and realized the great benefit which must result to the profession at large by having attention called to it. I am in hearty accord with the paper, and have no criticism to make. The lesson to be drawn is, I think, that it is a good thing to correct these troubles, but a far better thing to be on the watch as guardians of

the public health, and not to wait until a patient complains of symptoms, and thus prevent such a disagreeable and suffering condition.

The cause of the trouble may not only be in the mouth, but in some remote part of the body, both agents working together. Our duty lies in watchfulness for the slightest symptom and in the correction of the occlusion that, with our foresight, we may prevent such disastrous consequences.

Dr. Brown (closing the discussion).—I wish to thank the gentlemen for their very kindly expressions and to express my appreciation of *Dr. Eames* in remembering my paper some years ago. It has interested me very much to know that the testing of the force of the jaws is being done by any one. I doubt its practical value in dealing with the cases, because patients in their conscious moments find it impossible to place the jaws in the position through which the irritation comes. Further, I do not think a patient asked to do that could give the amount of stress upon the teeth that would be given in a moment of nervous excitement or when the nerve-centres are excited by some dream.

Prophylaxis is, of course, what this all leads to. All we can hope to do with a paper of this kind is to call attention to the necessity of finding the factor in the nervous disturbance. The most interesting part of my work is in being able to lead these children in the direction which I hope will prevent these troubles. When parents have suffered and their attention is called to the treatment, they are quite willing to bring their children.

Autointoxication is a predisposing factor, and often an exciting cause of these conditions. I have an interesting case, and have seen others illustrative of this cause. The case is that of a young lady whose headaches have almost entirely disappeared, except when she meets a young man whose influence is such that when I see her on the street I can see by certain lines in her face whether she is going to have a headache. Though the patient is in perfect health, she has in a short time all the symptoms of autointoxication.

Adjourned.

MASSACHUSETTS DENTAL SOCIETY.

(Continued from Vol. XXIII., page 945.)

President Faxon.—The next thing in order on the programme is a paper by Dr. Walter F. Bisbee, of Camden, Me., entitled "Crown- and Bridge-Work to the Country Dentist," using W. H. Baird's method for making crowns, and other cheap methods.

(This address, having been given at the meeting of the Northeastern Association in October, 1901, is not incorporated in this report.)

President Faxon.—Dr. Bisbee has shown us how he carries on his work. Is there anything to be said in regard to the matters of interest in his paper? It certainly must contain many interesting points to some of you. Dr. Bisbee will be glad to answer any questions. Many of you heard Dr. Bisbee at the meeting of the Northeastern Association. I presume, and have benefited by his teaching.

Dr. J. N. Crouse, of Chicago.—The essayist is correct in stating that pulps usually die soon after the tooth is crowned. Some men attribute it to arsenic in the cement, but I am inclined to believe it is the phosphoric acid.

Dr. J. T. Paul.—I do not think that I quite got the idea of the cuttle-fish. Please explain it again.

Dr. W. F. Bisbee.—If I want to make a central or a lateral, I take a porcelain tooth up at that middle point. I press this into the cuttle-fish in this way. (Illustrating.) Then I put this ring over it. For a seamless crown you put it in endways.

Dr. W. I. Brigham, of Framingham.—I think that Dr. Bisbee prepares the crowns and has the cap properly fitted, and that is just the reason he has such good success; it is because he crowns them right and fits them properly; but the way many of the teeth are crowned, it is no wonder the pulps die. A great majority of the molars have the crowns laid on anywhere near the gum line. This is to me barbarous treatment.

President Faxon.—I think our experience will bear Dr. Brigham out. When the enamel is left on there is less danger of the pulp dying. Is there anything further, gentlemen?

Dr. King.—I would like to ask Dr. Crouse if treatment of the tooth with nitrate of silver where the enamel has been removed will prevent the action of the phosphoric acid on the pulp?

Dr. J. N. Crouse.—I think if carbolic acid or nitrate of silver were freely applied to the tooth before the band was put on there would be less danger of the pulp dying, but the most satisfactory and practical plan is to use an acid which will not irritate the pulp.

Dr. Ned A. Stanley, of New Bedford, Mass.—Chloroform acts as a preventive to some degree. It might destroy the action of the phosphoric acid.

Dr. D. Hurlbut Allis, of Springfield, Mass.—The better way yet is to use gutta-percha entirely, as we see a great many of our young men doing who are giving satisfactory crown- and bridge-work.

Dr. Ned A. Stanley.—While the question of the gold crown is under discussion, I wish to protest against its abuse; its easy adaptation has led to its too free use, and teeth that might be saved artistically have fallen victims to the gold cap, which at once is a monument to the inartistic skill of the dentist and a trade-mark for the patient to be known by among her friends. I refer more particularly to the capping of the incisor, canine, and bicuspid teeth for our lady patients.

Every dentist who is not familiar with the staple crown ought to become so as soon as possible. It is as durable for bridge-work, and avoids the unsightly glare of the gold cap, and you know it is the artistic as well as the practical which we are striving for.

President Faxon.—As the time is limited, I think I will ask *Dr. Bisbee* to close the discussion, and then a motion to adjourn will be in order. There is another paper at two o'clock. There will be time enough for us to get a light lunch, and I should recommend the same, as we are to have a banquet and I hope all will attend.

Dr. Bisbee.—I have nothing to say except that I believe in having very little gold show.

Adjourned.

Afternoon Session.

Session was opened by the President at 2.15 o'clock.

President Faxon.—The next paper to be presented before the Society is one not coming from the sublime to the ridiculous, but from the scientific to the practical. It is a subject about which there has been very little said in our meetings. It is "Management of Children in the Dental Office." It touches a little upon the

psychological attitude of the dentist, and I am very much pleased to present to you Dr. Horace E. Eaton, of Toronto, Canada.

(For Dr. Eaton's paper, see page 8.)

DISCUSSION.

President Faxon.—To see Dr. Eaton stand up before us is enough to convince us that he understands the handling of children or any of his patients. To hear him read his paper would require but one word to impress upon us the fact that he is an expert in this line. He must have some of that imagination in children's stories that he has given children credit for. He has treated the subject in a psychological manner, and no doubt the susceptibilities of those who have heard him will receive their share of the good seed he has strewn around. The committee has been fortunate in procuring one to open the discussion on this subject who is a professor of psychology, who has taught throughout the country, as well as many dentists in Boston. I will ask Professor Barnes, Professor of Psychology, of the city of Boston, to favor us with some remarks.

Professor William A. Barnes, of Boston, Mass.—I feel much out of place here to-day, and not being accustomed to talk to an audience of this size, I have prepared a paper to read. At the end of this paper some of you may have questions you wish to ask, and I will take great pleasure in answering them.

The management of children in the dental office is a matter of keen knowledge of child-nature, and a fine application of tact as practically applied to dentistry. Dr. Eaton has thoroughly covered this subject in his able paper, and shown us how to apply general principles in the particular cases which he cited.

A practical working knowledge of just how to handle children in the dental office must be acquired and developed from actual experience. Not being a dentist, I can simply give you general principles in the art of control deduced from my own personal experience with men, women, and children in my particular profession.

A driver of high-bred trotting horses would scarcely expect to get valuable pointers in driving from a man who handles draught horses, ponies, or mules. You can readily understand that my relative position to you is that of the cart-driver to the expert jockey.

Were it not for the demonstrated fact that burley blacksmiths have become expert in mechanical dentistry, as well as remarkably successful in delicately handling men, women, and children in the dental office, we would not be here to-day discussing ways and means for mutual improvement; in a word, the Massachusetts Dental Society would not be in existence.

Since child-dentistry is an avowed necessity, it behooves every intelligent, progressive dentist to look about him for improvement in means, methods, and suggestions by which he may be enabled to perform the duty with credit to himself and his profession and with greater satisfaction and comfort to the little patient.

Now, the general principles underlying the scientific control of a being, be it horse, man, woman, or child, are identical. When one has thoroughly mastered a *working knowledge* of the general principles, all that remains to be done is to practically apply them to the particular work in hand.

It is now in order for me to give you a few general principles, which I will illustrate with incidents from my own daily experience, showing the practical application.

First. One is controlled by the strongest impression made upon the mind; in other words, one will do as he thinks, and not as others think.

Second. The mind can only be occupied fully with one idea or sensation at a time.

Third. The senses are the only avenues through which sensation can possibly reach the mind.

Fourth. The mind controls all emotional and physical activity.

Fifth. The mind of another is controlled principally by means of that subtle force best known as psychic power.

Sixth. Psychic power is expressed, or thrown out, by the operator's general appearance, gestures, facial expression, and verbal suggestions. Everything should combine and harmonize to convey the one leading idea which he wishes the patient to faithfully carry out.

Seventh. The physical expressions, verbal suggestions, and ideas of the operator must harmonize, or be adjusted to the one whose confidence he desires to obtain.

Success in influencing and controlling children, or, indeed, any one in any sphere of life, depends wholly upon the above-named general principles being put into intelligent practice.

One of my pupils, a physician, on coming to me for his second lesson, told me that he had been very successful in controlling his oldest boy psychologically, but had utterly failed to influence the younger one. He wished me to tell him why he had failed. I asked him to describe the nature of the two boys. When he had done so, I explained to him that the boy whom he had failed so entirely to influence was much more active in mind and body than the older one, and that he himself was too slow for the boy,—he bored him. In order to influence him, he must whip up, be more active in body and mind, and give the verbal suggestions more rapidly. He stated on his return, with much satisfaction, that he had been successful after following my suggestions in the case.

Another pupil, a lady, brought her youngest daughter upon whom to demonstrate and illustrate the lesson,—the control of one mind by another. I had successfully demonstrated the first lesson upon the mother, to her great satisfaction, and she had the utmost confidence in my ability, but not very much in her own. The mother and child of about ten years had scarcely seated themselves comfortably, when I tried to induce the child to talk about her school. As I had another pupil coming at the close of that hour, I naturally hurried the child too much. It being her first visit, and I an entire stranger to her, of course there was more rapid mentation than usual going on in her little brain. I fully realized these unfavorable conditions, but told her mother that I would try to influence her. I attempted to hold her spell-bound in her chair, but failed to do so, as I knew I must, considering existing conditions.

This failure surprised and excited the mother. She exclaimed, "Well, I do not see why you cannot influence my child; you influenced me."

I said to her, "Madam, your child is somewhat excited." "My child is not excited, and I want you to influence her," was the reply. "You do not understand me," I said. "Of course, your child is not excited in the broadest sense, but I am a stranger to her, the office is strange to her, consequently there is more or less rapid mentation going on in her brain. In other words, I have not taken the requisite amount of time to induce the most favorable state of consciousness for the reception of a new idea. If you will bring her the next time you come for a lesson, I will not be so hurried and will influence her for you." When the mother returned for her lesson she brought the child, as I had

requested, and I was successful in controlling her to any extreme within a few minutes after she had entered the office.

These two attempts fixed indelibly a principle in the mind of the mother which I wished to impress upon her during the first lesson. In no other way could I have lodged this truth in her crude state of mind. The principle is to prepare the ground before attempting to sow the seed.

A gentleman engaged in the grocery business called upon me for general information. He told me that he did not have much faith in this power, yet, if there was anything in it by which he could increase his health and make him more successful in business, he might take it up. During our conversation he expressed great doubt as to there being anything in it for him. However, at the close of our talk he paid me one-half the amount for the full course of instruction, saying that he expected to leave the city for a week or two, and on his return would pay the remaining half and begin instruction. Two weeks, three weeks, four weeks, five weeks, six weeks rolled away, and still no sign of the gentleman. At the end of this time I wrote him suggesting that he begin his course of instruction before I left for my summer vacation. He came in answer to this, and said that he had not felt in good spirits, and had decided that he would not take up the instruction, that he preferred to lose what he had paid rather than risk losing a similar amount. I asked his reason for changing his mind. He said that a friend had discouraged him. I asked if his friend knew what he was talking about. He said he thought not, but was of the opinion that there was nothing in it. "Well," said I, "you take the advice of one who does know, pay the balance and proceed with the instruction immediately. You are the very man who sorely needs such instruction." The result of this encounter was that the gentleman was on hand promptly that same evening at seven o'clock for his appointment, but had again changed his mind. It took just about one minute to turn his thoughts in the direction that was surely for his own best interest. However, he still insisted that he did not believe in the influencing and controlling power. By way of answer, I called attention to the fact that his mind had gone through many changes, and that more than likely he would have to be knocked down and sat upon before he would realize the truth. Following this up, I influenced him so that he could not possibly open his

eyes, and begged me to release them. Before he had time to forget the power of influence, I made him admit that he believed in it from personal experience, and that he was so thoroughly under my control that he was unable to resist it.

The most remarkable case which I will lastly and briefly mention, to impress upon you this matter of adjustment, is a patient whom I have at the present. I first learned of the case and was engaged to do something for him, if such a thing were possible, about the first of May. To use his mother's expression, "If you put him in a hole he would simply stay there." He was very morbid and ugly, and often wept for no apparent reason. No effort to get him out of doors or even near a window proved availing: nothing in the world had the slightest interest for him. My first visit was a brief one, about one minute, and my reception was not very cordial. I called every other day, gradually increasing the length of my stay, until at the present time I find it advisable to spend a half-hour with him each time. We take delightful walks together and have the most enjoyable talks on various subjects. Altogether the acquaintance has proved one of mutual benefit and pleasure. He has entertained me several times with sweet music, and his gentle manner is most attractive to me. He has been to see me at my office also.

Adjustment, harmony, naturalness, skilful suggestion, and love for mankind will explain it all.

Successful management of children depends as much or more upon what the operator does not say and do as upon what he does say and do.

1. Don't tell the child that you will not hurt him.
2. Don't talk too much.
3. Don't be excited or undecided in the presence of the child.
4. Don't let him see the instrument in your hand until absolutely necessary.
5. Don't make any false movements.
6. Don't ask the child if he wants his teeth attended to.
7. Don't make unnecessary remarks.

Following are a few things you might *tell him*.

1. Possibly your experience will be more pleasant than you think.

2. Come right along with me and we will make things just as comfortable as possible for you.

3. I think you are as agreeable and pleasant a boy as I ever saw.

If the dentist will eliminate those things which he should not do and say before children, his success in this particular line will be increased in the same proportion.

The extreme susceptibility of children often makes them more difficult to manage than adults, as the adjustment must be on a finer scale. This brings up the subject of self-control and perfect mastery of self. Study child nature, increase your psychic power, learn the law, and control your psychic force.

President Faxon.—Before closing, I would like to ask if there are any questions you would like to ask Professor Barnes. If not, I will ask Dr. Fillebrown to make a few remarks on this subject.

Dr. Thomas Fillebrown, Boston, Mass.—*Mr. President,* Dr. Eaton as a fairy man seems to beat us all. I was much interested in his very valuable paper. The question occurs to me. What are we fellows that cannot tell such nice fairy-tales going to do? Dr. Eaton has remarkable skill in this direction. He will conquer his patient every time. I do not doubt, yet I feel sure there are those of us who are not so ready, who have not got the fine qualification of the essayist. Now, what is this qualification of the operator? It is, I think, simply self-command, repose. Our essayist says never get mad, and if you do, keep it to yourself. We must not show ill-temper when we feel it. We can bring ourselves under such control that we will not have such a feeling towards any patient. A way to get this control is described in a small volume on "Power through Repose." It is one of the best books I have ever read. We all have experienced the difficulties the essayist has mentioned. We have simply got to be a little longer about the work. The boy who was nearly utterly incorrigible was soon brought under control by that quiet way of repose. According to my observation, instead of children's disliking to come to the dentist the first visit is a pleasure, but if you find a child who has had two or three unpleasant visits, you have a very different subject to deal with.

I do not think that it is necessary to keep the instrument out of sight. Let the children understand that they are the ordinary daily instruments of our work. I never thought of such a thing as keeping the instruments out of sight unless the child had been frightened beforehand. The best way is to look at the teeth,

avoiding any disparaging remark, and just say to the child, "This will not hurt you to amount to anything. If it hurts a little, you will not care anything about it." Say to the child, "Just see how heavy you can make yourself. See how big you can breathe." You will be surprised how this way of proceeding will quiet yourself and the child too. I lately had a patient, a boy about six years old, and when I got him settled down I said to him, "Now, it will not hurt you," and in this case it did not at all. Now, here is a little plan that every one can use to-morrow. When you are about to commence to operate, just compose yourself by taking several long, deep breaths, ask your patient to do the same; you will be surprised to see how composing this simple thing is. It works just the same with adults as with children. Fear is the worst part. What you want is to allay those fears. What I have described is the way to do it. This is very simple, and you can all easily try it, and will succeed.

I at first believed in the necessity of shutting the patient's eyes so he could not open them without my permission. I soon found that I could make the suggestion effective without any special suggestion, until at the present time I very rarely hypnotize a patient. Possibly in such cases the patient is just as much hypnotized as if he were paralyzed in every muscle. Now, if this could be brought about, all we need for practical purposes is the personal, quiet influence of the operator on the patient. One case illustrates my point. I attended a meeting of the Vermont State Society some years ago while I was in my second stage, when I believed absolute hypnotism was not necessary. I asked for a patient for a clinic. A young boy was found whom I had not seen before, and who had little or no idea of what was wanted of him. I took an instrument and touched one of his teeth, and he nearly jumped out of the chair. I had to hold him down. I waited a moment or two, and then I placed my hand on his head and said to him, "This won't hurt you this time." Then I took an excavator and prodded all over the tooth and into some labial cavities, and he never winced. This is just a sample of my daily practice, and it can be the same with you. I hope you will try it. It is just as applicable to the child of one age as to another,—eight months, eight years, or eighty years.

Meeting adjourned till 6.30 P.M.

(To be continued.)

INTERNATIONAL DENTAL FEDERATION AND INTERNATIONAL COMMISSION OF EDUCATION: SECOND GENERAL MEETING, HELD AT STOCKHOLM, SWEDEN, 1902.

(Continued from Vol. XXIII., page 853.)

INTERNATIONAL DENTAL FEDERATION.

Wednesday, August 20, 1902.

DR. E. SAUVEZ, the secretary-general, then read the report which here follows:

GENTLEMEN AND HONORED CONFRÈRES,—I consider that my first duty before presenting this report is to express my deep gratitude to my colleagues of the Executive Council for the honor conferred upon me last year at the London and Cambridge meetings by appointing me secretary-general of the International Dental Federation for the year 1901-2. I fully appreciate the importance of the position, and if during the course of the past year I have given evidence of even slight negligence, I now ask you to excuse anything that I may have done that could deserve such a criticism. Several members of the Commission of Education because of insurmountable circumstances are not able to be present at these meetings, and I have been requested to present the regrets of Drs. Kirk, Roy, Pearson, Rosenthal, and Burne.

I will now give you a *résumé* of the most important events that brought about the organization of this body, and also the steps taken by the Federation since its last year's meeting. It is exactly two years since the Federation was organized, it being created by a resolution of the general assembly of the Third International Dental Congress, held in Paris in 1900. Its first meeting took place last year in Cambridge, and in looking at the present audience I cannot help seeing that the importance of this body has been largely increased since our last meeting. The great assembly of which the Federation is the outgrowth thought that the work of preparing congresses by the constitution of international committees should survive for a future work similar in nature to that for which they were originally created. That assembly appreciated the advantages to be derived from bringing together the professional forces scattered in the different countries and forming in

this way a permanent international body. This is a very solid and compact group because of the status of the members that compose it, inasmuch as the members of the national committees have been elected by their *confrères* after due selection, the only way of satisfying minds imbued with modern liberal ideas. For this reason the Federation met with warm approval beyond the Atlantic, as it is an organization fully in harmony with the ideas of the sons of free America.

The Federation, then, and its Executive Council are the direct outgrowth of the Congress of 1900. At the memorable meeting to which we have already referred the *Fédération Dentaire Internationale* was created, and it was decided that a permanent committee of nine members should direct the work of the Federation until the holding of the next congress. The Executive Council decided to create international commissions to study the most important questions of our profession,—viz., dental education and public dental hygiene. The first session was held last year, partly in London and partly in Cambridge. That session was devoted especially to the organization of the work and to the consideration of all the questions to be submitted for your study and consideration, and to the appointment of essayists to discuss these questions.

The foregoing is a *résumé* of the events that took place up to the adjournment of the Cambridge meeting. Let us examine now what has occurred since that time. The secretary has published the proceedings of the London-Cambridge meeting,—viz., a *résumé* of the meetings of the Executive Council and of the International Commission of Education. This report has been published in French, and, thanks to the kind interest which Dr. Kirk had in this matter, the report has also been published in English, and each of you have received a copy. We were also able to publish the report in German, and our colleague, Dr. Aguilar, has taken charge of the publication of the report in Spanish. During the course of the last year we have at intervals published bulletins in four different languages so that the dental profession might be made acquainted with the most important features of our work. Lastly, we have carried out several decisions of the Executive Council, and we have had the satisfaction of receiving a considerable number of replies. Dr. Roy, secretary of the Commission of Education, in conjunction with the secretary-general, has taken steps to obtain the reports the collection of which was decided upon

at the last meeting. The Executive Council had asked that a report of the professional status of each country with special reference to schools, societies, and journals be forwarded to the secretary-general. The Commission of Education asked that the members appointed for this purpose should answer the three questions that had been submitted with reference to the best methods of education. This Commission also requested that reports be prepared on the subject of dental legislation and education, and to state the conditions under which the affiliation of all the schools to the Commission of Education of the *Fédération Dentaire Internationale* might be brought about. The members of the Commission on Public Dental Hygiene were also requested to present a report upon dental hygiene with reference to public health. We have received, translated, and published in three fasciculi which have been sent to you the communications which were forwarded to us, and we now take the opportunity to thank the essayists for their careful work.

We are in receipt of a communication in which we are informed that Dr. Franck had been regularly appointed by the general assembly comprising the delegates of several dental societies of Austria and Hungary in place of Dr. Pichler, consequently Dr. Franck is now a member of the Executive Council, and his collaboration is of great importance to the work of the Federation.

The officers of the Executive Council have held several meetings at frequent intervals and numerous decisions have been rendered. The question of deciding upon the date of this meeting was the cause of numerous discussions and of a voluminous correspondence. The officers of the Federation and of the American Dental Society of Europe, wishing to hold a joint meeting, met with considerable difficulty in fixing the date because of the meetings of the French Congress at Montauban and the German Congress in Munich. Finally, through the efforts of several officers of both societies and the personal efforts of Messrs. Royce, Mitchell, Cunningham, and Davenport, we were able to agree, as the only purpose in view was to assure the success of the Stockholm meeting and a perfect understanding between the members who have come from such distant countries. Because of these circumstances we were obliged to decline an invitation which had been addressed to the members of the Federation by Dr. Haderup, of Copenhagen, on behalf of the Danish Dental Society.

The Executive Council has done everything within its power to increase the attendance at the Stockholm meeting. Communications were addressed to Dr. Limberg, president of the Russian National Committee, requesting that the Russian societies should send delegates to the Commission of Education. This question was discussed at the Congress of Odessa, and we have been informed that Dr. Klingelhöfer, of St. Petersburg, has been appointed delegate. Professor Limberg, because of ill health, will not be able to be with us on this occasion. We are glad to say that we have been informed that from fifty to sixty delegates have arrived, a number considerably larger than that of last year.

This completes the description of the most important features of our work during 1901-2.

Enough has been said with reference to the past, therefore we will now survey the present. The International Dental Federation begins to-day its second meeting in this beautiful city of Stockholm, in accordance with the decision passed last year at Cambridge and accepted unanimously by the members of the Executive Council, following the invitation regularly transmitted to us by Messrs. Förberg, Christensen, Sandstedt, and Forssman.

The Executive Council will consider whether there is any necessity for amending the by-laws, inasmuch as it is only one year since they were adopted. It will look into the question of the proportional division of the expense incurred by the Federation. It will have to appoint officers for the coming year, and it will have to carefully examine the question of the part which the Federation should take in the next International Congress of Medicine, to be held in Madrid in April, 1903. The Federation will have to designate the city in which the next meeting of our association should be held, and as the period for the holding of the next International Congress is very near, it will have to select the city in which this international gathering shall take place. It will have to appoint to the existing committees the delegates to the Federation. The Executive Council cannot make this distribution of members, which by the way is the basis of the work of this association, unless the Executive Council knows definitely the names of the delegates, of the societies they represent, as well as the character of the mission they have been intrusted to carry out in Stockholm. In one word, the Executive Council should know the special line of work the delegates would wish to take up in connection with the Federation work.

We have two official delegates from foreign governments. Dr. Florestan Aguilar is the representative of Spain, and Dr. Vincenzo Guerini represents the government of Italy. We have received official communications from several societies with reference to the appointment of delegates, but some of the delegates that are in Stockholm at present have not registered as yet, and it is necessary that the Executive Council should certify their credentials. I will therefore ask the delegates to turn over to the secretary-general their credentials immediately after the adjournment of this meeting; also the papers, addresses, etc., with which they have been intrusted by their governments, federations, or societies. They will be asked to indicate in what committee they would like to take part. All of you, I presume, understand the importance of this recommendation.

It will also be the duty of the Executive Council to discuss whether it would be useful to appoint new committees in order to widen the field of activity of the Federation. We believe that it would be a useful measure to create a committee on schools that would regulate all the questions regarding scholarship, matriculation, requirements of admission, and examination of students. Such a committee would be in position to give correct information regarding all topics connected with school organization. It would also be advisable to organize a committee on jurisprudence and deontology, in order to centralize in this way all the information regarding the practice of dentistry in the different countries, as well as all the laws and regulations that affect our profession. A committee on statistics would also be an advisable addition to the committees already appointed by the Federation.

These are, gentlemen and *confrères*, only very superficial indications, and it remains with the Executive Council to decide whether such committees should be appointed.

The work of the International Commission on Education will be carefully discussed in a very complete report which will be presented by Mr. Martinier, who was appointed on this Commission at the meeting held in August, 1900, and who had been substituted last year by Dr. Roy. In this report the essayist will examine the documents that are printed in the three fasciculi.

Twelve reports were received in time for publication in these bulletins; others arrived too late to be inserted therein. You will find in these reports profitable topics for discussion, and you will

be able to reach definite conclusions with reference to the best methods of dental education. This Commission, before proceeding with its work, will have to appoint officers for the coming session.

The Commission on Public Dental Hygiene submitted a series of questions to representative members of the dental profession the world over, as appears in the report which has been translated and published in French. Unfortunately we have not had time to translate and publish all the papers and documents connected with this report. The commission will increase its membership by the addition of new delegates, will appoint officers, and will organize its general plan of work. We are convinced that the discussions of these two commissions will bring about fruitful results, and that the 1902 session of the Federation will do a great deal towards the solution of the multiple questions which will be brought up for discussion.

This, gentlemen, is the work that we will have to carry out in Stockholm. Besides that we will have to prepare the work for the next session, submit new topics for discussion, appoint essayists, and divide the work according to personal abilities and inclinations. It is in this way only that we will be able to organize a Federation which will grow daily in importance and usefulness.

I have attempted to bring before you in this report in as clear a manner as possible the work that is awaiting our consideration. I am sure that you all will agree with me when I say that the very few days that we will have for the study of these important points constitute very limited time if we consider the magnitude of the work.

In ending this report, I regret that it has been of such slight interest, but it is only a business report. Before concluding, however, I want to call your attention to another very important point in connection with our work,—viz., that nationalities and personalities do not exist here. As I stated last year, we are only the cells of an organ: the cells change, but the organ remains the same. The great army which is formed by all the dentists the world over has appointed us to represent it and to take care of their interests until the next meeting, that is, until the next congress. The members that are here present constitute the officers of this army, and we must show the next congress that we have endeavored to carry out this mission.

EXECUTIVE COUNCIL.

First Extra Session, August 14, 1902.

The meeting was called to order at 4 P.M. in the Grand Hotel at Stockholm, by the president of the Executive Council, Dr. Chas. Godon. The following members were present: Drs. Aguilar, Cunningham, Förberg, Harlan, Hesse, and Sauvez.

Dr. Sauvez made an *exposé* of the financial situation of the Federation, and stated that the expenses of the meetings at Paris, London, and Cambridge amounted to 1164.30 francs, and the receipts to 115 francs. He also stated that there were as yet a number of subscriptions to be collected, and that this would balance up the account. He then submitted to the several members of the Council his written report.

The Council then decided to appoint a committee to study the arrangements made last year with the publisher of the transactions of the Federation, and to prepare a contract for the publication of the transactions of the present session. Drs. Harlan and Frank were appointed as such committee.

Dr. Sauvez then stated that the expenses incurred in the preparation of the present session of the Federation amounted to 1295.65 francs, this sum including the cost of preparing and publishing the three fasciculi published by the Federation.

The Council appointed a committee composed of Drs. Aguilar and Sauvez to study the best way of defraying the expenses of the Federation meetings.

Second Session, August 15.

The meeting was called to order by President Godon at 10.30 A.M. The minutes of the last meeting were read and approved. Dr. Cunningham presented the regrets of Dr. J. E. Grevers, Amsterdam.

The committee on finance, appointed at the last meeting, presented a report. The committee believed that each member of the Council and of the different commissions should pay a fee of fifty francs, and that the delegates should pay a fee of twenty-five francs. They also advised the opening of a voluntary subscription among the several journals, federations, associations, and societies, and that the committees of organization of future congresses shall also contribute towards this fund. The committee

also decided that when a member represents several societies, he should pay a separate fee for each such society. The Council adopted these propositions.

Dr. Florestan Aguilar was then unanimously elected treasurer of the International Dental Federation.

On motion by Dr. A. W. Harlan, Chicago, Dr. Truman W. Brophy was introduced, in order to present the several invitations relating to the Fourth International Dental Congress.

Drs. Förberg and Sauvez then made a few remarks regarding the opening session of the International Dental Federation to be held at the Caroline Institute.

The questions embodied in the invitations presented by Dr. Brophy were then discussed by the members of the Council.

Third Session, August 16.

At this afternoon session, the president called the meeting to order, and Dr. Sauvez, the secretary-general, read the minutes of the last session, which were approved.

The invitation of the National Dental Association of the United States to hold the Fourth International Dental Congress in St. Louis was again taken up for discussion. Dr. Cunningham proposed that the final decision should be taken at the next meeting of the Federation. Drs. Franck and Harlan asked that the final decision should be taken at the meeting of the Executive Council to be held August 18. The Council accepted this last proposition.

Fourth Session, August 16.

Dr. Chas. Godon, President of the Council, called the meeting to order at 11.30 A.M. The following members were present: Drs. Aguilar, Cunningham, Förberg, Franck, Harlan, Hesse, and Sauvez. The minutes of the last session were read and approved.

Dr. Sauvez read the list of the delegates of governments, federations, and societies. He also read a list of the members at that time in Stockholm. Dr. Sauvez read the names of those that had been proposed as members and adjunct members of the International Commission of Education and of the International Commission of Public Dental Hygiene.

After the Council had rectified these lists, the secretary-general read a letter relative to the appointment of Dr. Klingelhöfer as the representative of the government of Russia. Dr. Klingelhöfer

was then appointed adjunct member of the Executive Council of the International Dental Federation.

Fifth Session, August 16.

Dr. Chas. Godon presided over the session, which was attended only by Drs. Aguilar, Franck, and Sauvez. After having approved the minutes of the previous session, the secretary-general proposed a programme for the meeting to be held August 18. This programme as submitted by Dr. Sauvez was approved by the Council, which then adjourned until August 18.

Sixth Session, August 18.

The meeting was called to order at twelve noon by the president, Dr. Godon. The meeting was attended by Drs. Aguilar, Cunningham, Förberg, Franck, Harlan, Hesse, and Sauvez. The minutes of the previous meeting were read and approved.

After a short discussion regarding the F. D. I. banquet, the question of the invitation of the National Dental Association of the United States to hold the Fourth International Congress in the city of St. Louis was brought up for discussion.

Dr. Cunningham moved that the reply to this invitation should be postponed until the next meeting of the F. D. I.

Dr. A. W. Harlan was willing that the decision should be postponed to the next session, in order to give time to examine a technicality in the invitation in question, but Drs. Hesse and Aguilar stated that it was preferable to take up the discussion at once, as the Council must take into consideration that the invitation had been addressed through regular channels and in due form.

Dr. Cunningham insisted that the final decision should be deferred until the next session of the International Dental Federation, thinking that perhaps by that time invitations from other countries might have been received.

The president then decided that independently of the question of accepting or declining the invitation, the Council should fix at that session the date of the next Congress. It was then submitted to the vote of the Council and was adopted, as all the votes except one were in favor of the president's suggestion.

Professor Hesse thought that the invitation to hold the next Congress in the city of St. Louis, in the United States of America, should not be accepted, and further, that his opinion would have

Dr. Cunningham's support. He regretted that his views would suggest an apparent lack of courtesy towards the American *confrères*, but he thought that the general interests of the International Dental Federation should be considered first, and that it was only with that purpose in view that he decided to recommend the non-acceptance of the invitation. He then stated that his specific reasons would be submitted to the Council in writing.

The president stated that this question should be very carefully studied and considered before reaching a decision.

Dr. Franck stated that after having conferred with his countrymen they had reached the conclusion to accept the cordial invitation made by the dental profession of America.

Dr. Sauvez expressed himself plainly and definitely as being in favor of accepting the invitation.

Dr. Förberg said that as the reasons given by the members who opposed the acceptance of the invitation were not in any way so important as those advanced by the members who were in favor of holding the Congress in St. Louis, the invitation should be accepted.

The president submitted the question to the individual vote of the members, with the result that the invitation was accepted by six votes against two. The Council then appointed a committee composed of Drs. Hesse, Aguilar, and Sauvez, to prepare the acceptance to the invitation addressed by the National Dental Association of the United States.

The Council then proceeded to the election of officers for the ensuing year. The result was as follows: President, Dr. Ch. Godon; vice-presidents, Drs. Aguilar and Franck. Dr. Sauvez was elected secretary-general by acclamation.

Seventh Session, August 18.

The president called the meeting to order and the following gentlemen answered the roll-call: Drs. Aguilar, Cunningham, Förberg, Franck, Hesse, and Sauvez. The minutes of the previous meeting were read and approved.

In accordance with Dr. A. W. Harlan's proposition, the Council decided that in the letter which would be addressed in reply to the invitation presented by Drs. Wm. C. Barrett, Truman W. Brophy, and Eugene H. Smith, in the name of the National Dental Association of the United States, it should be specified that Drs. Tru-

man W. Brophy, William C. Barrett, Eugene H. Smith, W. Conrad, Gordon White, H. A. Smith, W. R. Windhorst, S. H. Guilford, and J. D. Patterson have been designated to form a committee to collaborate towards the organization of the Fourth International Dental Congress, as representatives of the Executive Council appointed by the Third International Dental Congress.

The secretary-general read a statement signed by Messrs. Hesse and Cunningham, that they could not give consent that the F. D. I. should lend its support to the Congress to be held in St. Louis in 1904, for the following reasons:

1. A lapse of four years after the last International Dental Congress is too short a period to warrant the holding of another congress, as the progress which has been made in dentistry since then is not considerable enough to justify the holding of another international gathering.

2. That they could not assure the attendance of a sufficient number of members from each country to justify calling it an International Congress.

The secretary-general then read the letter to be addressed to the National Dental Association of the United States in reply to the invitation to hold the next congress in the city of St. Louis.

The document referred to is as follows:

The Executive Council of the International Dental Federation, intrusted by the Third International Dental Congress with the organization of the succeeding congress, having read the invitations addressed by—

The National Dental Association of the United States of America,

The governor of the State of Missouri,

The mayor of the city of St. Louis,

The National Association of Dental Examiners,

The Dental Society of the State of Missouri,

The St. Louis Dental Society,

The Society of Dental Science of St. Louis,

The Odontographs of Western Missouri and Eastern Kansas,

The St. Joseph Dental Society,

these being regularly represented at the Stockholm sessions by Messrs. Truman W. Brophy, Wm. C. Barrett, and Eugene A. Smith, accredited for this purpose:

CONSIDERING, on the one hand,—

1. That the progress of dentistry in the interval of four years seems insufficient to warrant a scientific interest in a fourth International Dental Congress after the one that was held in Paris in 1900;

2. That it would have been desirable that the forthcoming congress

should be held in a country in which a similar international reunion had not been held before:

But, on the other hand,—

3. That universal expositions attract a considerable number of visitors from all countries, and are especially favorable to the success of international congresses;

4. That several international congresses will be held upon the occasion of the St. Louis Universal Exposition, and that it is necessary that odontology should be represented;

5. That no other invitation has been received;

6. That it is desirable to reach a decision so as to give ample time for a good preparation;

7. That the good organization of the congress is assured by the worthiness of the invitations received:

ACCEPTS the invitations, and DECIDES that the Fourth International Dental Congress shall be held in the month of August, 1904, in the city of St. Louis, Missouri, United States of America.

The undersigned certifies that this is an extract of the proceedings of the Executive Council, and that it is an exact copy of the letter to be sent in reply to the invitation received.

(Signed)

The Secretary-General,
DR. SAUVEZ.

The secretary-general, Dr. Sauvez, then read a letter from Dr. A. F. Caro, minister of Spain at Stockholm, requesting the Federation to take part in the Fourteenth International Congress of Medicine to be held in Madrid. The Executive Council addressed a letter of thanks to Minister Caro, assuring him that the Section on Odontology of the International Congress of Medicine to be held at Madrid would have the support of the F. D. I. The Council recommended the foreign representatives to take part in this section of the next International Congress of Medicine.

The question of deciding upon the city in which the next meeting of the F. D. I. should be held was then taken up for discussion.

Dr. Aguilar suggested that the Federation should hold its forthcoming meeting in the city of Madrid at the time of the holding of the Fourteenth International Congress of Medicine. A motion to this end was presented by Dr. Aguilar, and was adopted by seven votes against one.

Dr. A. W. Harlan made a motion to the effect that in case of death of one of the members of the Congress Committee, the other members should have the power to fill the vacancy. This motion was adopted.

Eighth Session, August 19.

The session was called to order by President Godon, the following members being present: Drs. Aguilar, Cunningham, Förberg, Franck, Hesse, and Sauvez. The minutes of the last session were read and approved.

The secretary-general proposed the names of Drs. Frick, Guye, and Roy for adjunct members in the International Commission of Education, the name of Dr. Heidé as a regular member of the Commission of Public Dental Hygiene, and Dr. Bödecker for adjunct member of the same commission. This proposition was adopted by the Council.

The committee on publication then presented its report relative to the publication of the transactions of the F. D. I.

Dr. Aguilar, treasurer of the F. D. I., presented a report in which it was shown that the Federation had a balance of 402.65 francs to its credit. The treasurer's report was approved.

The secretary-general then read the following communication from Dr. Haderup: "Dr. Haderup is of the opinion that a committee of three should be appointed, said committee to have power to increase its number, for the purpose of preparing an international dental nomenclature and stenography. This committee to present a report at the next meeting of the International Dental Federation, to be held in 1904."

The secretary-general also read a communication from Dr. Förberg, with reference to the publication in each country of periodical reports of the most important writings on dentistry recently published. This report could be submitted to an editorial committee which would publish them in a universal dental review in two or more languages. The bulletin of the Federation could be used for this purpose, and in that way the International Dental Federation which unites to-day the dentists the world over would also become instrumental in creating a work which would constitute the universal history of dental science. Dr. Förberg submitted this proposition to the consideration of the Executive Council. It was decided that this question should be settled at the next meeting in Madrid.

The Council then adopted the by-laws of the Federation, with the exception of a slight modification affecting the financial side and resulting from the report presented by Drs. Aguilar and Sauvez with reference to the payment of fees.

The Council also decided to introduce a modification in the laws of the Federation regarding the regular and adjunct members of the Council, in order to make it possible to appoint the delegate from Russia a regular member of the Executive Council.

The secretary-general proposed that the Council should organize several international commissions,—one on schools, one on jurisprudence, and one on statistics. The Council then discussed the question of forming an international commission on jurisprudence by the appointment of one member in each country, and that the officers of the Executive Council should prepare a report of this question to be submitted at the next meeting in Madrid.

It was then decided that the discussions should be continued in Madrid, and that the officers of the Federation should have in charge the organization of the forthcoming meeting of the International Dental Federation, to be held in Madrid in April, 1903.

The Executive Council then adjourned.

(To be continued.)

NEW SOUTH WALES DENTAL DEFENCE ASSOCIATION.

ONE of the largest and most unanimous meetings of the dental profession which has taken place in the city of Sydney was held at the Manchester Unity Hall on Tuesday, November 11, to consider the advisability of taking steps to form an association for the purpose of mutual protection and support.

Sir James Graham, M.D., president of the Dental Board of New South Wales, occupied the chair, and was supported by Mr. Edward Reading and other members of the board. There were present, among other dental notables, Dr. Leopold Carter, Dr. I. P. Cliff, Dr. Stanley Rea, Mr. Donald Smith, Secretary of the Odontological Society.

The chairman said that it was a matter of history that this state was the last part of the civilized world to realize the enormous risks which were run in allowing the profession of dentistry to get into the chaotic state that existed until quite recently. The passing of a measure through Parliament gave the public some guarantee of a change in this condition. But the dental board brought into existence by that act had no function and no juris-

diction but that which was provided for it within the four corners of the measure. The time was not far distant when the constitution of the board would be placed in the hands of the dentists themselves. The legislation, however, useful as it has been, was no adequate guarantee to the public, and it was hoped that before long Parliament would be induced, in the interests of the people, to amend the law so as to further guarantee the professional qualities of the dentists registered under its provisions. This meeting was called for the purpose of establishing an association having the interests of the public in view, and for the purposes of professional interests. It was known that dentists and other professional men ran certain risks, which resulted in moral and material damage. Men who were exposed to these dangers recognized that only by organization they could successfully combat them. In no sense would the institution be a trade union, but simply an institution to defend the members against loss and hardship.

Mr. Horace Taylor (secretary *pro tem.*) explained the steps that had been taken to bring the movement under the notice of the profession, and exhibited some five hundred letters he had received from all parts of the state in congratulation and support of the proposal.

Mr. Ernest Blackwell moved "That this meeting is of opinion that it is desirable to form a Dental Defence Association, having for its objects—

A. To render assistance to any member who may be threatened with, or involved in any action at law or prosecution arising out of the practice of his profession within this state.

B. To assist in any movement which will promote fraternity among the members, or elevate and improve the social and legal status of dentists.

C. Promotion of the welfare of the dental profession of New South Wales. He pointed out that similar institutions existed in all the other Australian states and in other professions in this state.

Mr. Charles Hodgson, in seconding the resolution, stated that such an institution would have his heartiest support. He had advocated its establishment for years, and pointed out the number of speculative actions which had of late been brought against dentists, in which it was found that, in consequence of the impetuosity of the complainants, the defending dentists, although

adjudged to be without blame, were, notwithstanding, ruined through having to pay their own costs. If these cases had been met with determination at the outset by a powerful association like the one now proposed, these speculative actions would seldom if ever be brought.

In the discussion much light was thrown upon the practice of blackmail and other evils affecting the dental profession that are going on, and it was shown that dentists often paid lump sums to square unjust claims rather than run the risk of getting their costs in a law-suit.

The resolution was adopted without dissent.

Dr. Henry Peach moved "That a committee of twelve be appointed to draw up a scheme by which these objects may be attained and report at a future meeting."

The resolution was adopted, the voting resulting in the return of the following gentlemen as members of the committee: Henry Peach, D.D.S., E. G. Moon, Charles Hall, C. C. Marshall, Ernest Blackwell, W. R. Fitzsimons, Stanley Rea, D.D.S., J. E. Forsyth, D.D.S., I. P. Cliff, D.D.S., F. P. Head, Walter Robinson, and Edward Reading.

Editorial.

SALUTATION.

WITH this number of the INTERNATIONAL DENTAL JOURNAL commences the fourteenth year under its present auspices. Those who have preserved their copies during this period will find it contains a large mass of very good and useful information upon subjects both scientific and practical. Its contents during those years will compare favorably with any other of the dental journals published during the same time.

The present plans for the INTERNATIONAL DENTAL JOURNAL include a general increase of its pages, a regularly appearing review of the important articles in current dental journals, an enlargement of well-selected miscellany, composed of practical matter. Endeavors to secure a greater number of papers upon subjects related to practice will be made, and appeals to its readers

and to the associations it represents to contribute to it short articles in elucidation of technical subjects.

The INTERNATIONAL DENTAL JOURNAL was started and has been maintained on the ground that a strictly professional periodical should exist in which there should be no divided interests. It has aimed to avoid the paternalism which, however pleasant to many, is inconsistent with manly professional life and aspirations. It was felt that the deadening influences upon the profession could be best counteracted by the support of a class of journalism which would avoid the commitment of those desiring an independent effort to the custody of those whose animating motive is the cultivation of their business interests. There was no question that in the earlier days of the dental profession the trade journals were of great benefit, and, the leading ones continuing to render good service, the need of this kind of paternalism had well passed. It was considered by many that the times had ripened for the commencement and development of a journal that would tend to create a higher grade of professional sentiment and cultivate a feeling of solidarity among dentists the country over. This sentiment was founded in a sense of right and honor. For the defence of this right and principle this journal stands.

It is most particularly pertinent, in view of the fact that all of the trade journals have so clearly made it apparent by their recent action that trade influences are paramount with them, that the INTERNATIONAL DENTAL JOURNAL should reaffirm the motive for its existence. It appeals to professional spirit to give it renewed and *extended* support.

Our position can be best understood by the feeling which would arise among a religious body were its literature gathered and published by a department store, or a syndicate of undertakers; or the medical profession, were its magazines generally under the control of makers of surgical instruments or purveyors of medical supplies; or the Society of Ophthalmologists dependent upon an enterprising optician; or the legal profession, if it were under the paternalism of a vender of legal books.

The dental profession certainly has not become so deeply somnolent that it cannot perceive that a better state than is indicated above is desirable.

THE OUTLOOK FOR THE FUTURE.

THE year 1903 opens with lowering skies in the financial horizon, and while the optimists are crying prosperity there are signs of weakness in the business world, indicating that all is not as prosperous as our daily press would have us believe. In the business affairs of life these financial tides must be looked for; the ebb and flow are as constant as the waters of the ocean, and are governed by laws equally as immutable. To the philosophic mind there is nothing to regret in this, for it teaches the lesson that in the affairs of the world there must be changes, and time alone can determine whether these will result in good to individuals or communities; but whether for good or ill they are always accompanied by a valuable lesson that in part compensates for the bad and serves to moderate the satisfaction which the good derived usually brings to the fortunate recipient. Dentistry will probably be affected by the condition of the business world. It invariably does suffer, for, unfortunately, it is ranked by the large majority as one of the luxuries to be cut off whenever the indications are ominous of evil. This will always be so as long as people are not fully educated up to the standard of placing dental work, not among the luxuries, but with the necessities, those things that insure health, freedom from suffering, and prolonged life. Are dentists doing their whole duty in educating the people to a proper consideration of these important truths? A few are, but upon the whole, it is feared there is a laxity of conscience in this regard that is not only lamentable, but borders very closely on criminality. He who has had a clear knowledge of that which is beneficial to his fellows and fails to give it is simply following a line of selfishness which is the farthest removed from the true professional standard.

The life of the average dentist is, unfortunately, mainly secluded from the world. He moves in a narrow circle, or rather remains in a measure passive while the circle of patients revolves around him. This naturally leads to a contracted range of thought, and forces the conclusion that the day's work completes his duty. He has waited on so many patients and has performed his work to the best of his ability, and nothing more can be demanded of him. He retires within himself and seeks recreation in pleasures

foreign to his daily toil. While all this is natural, and in some directions commendable, is it that which is required of every one who has honorably earned the right to practise his profession? There can be but one answer to this, and that is, that the man who goes thus far and no farther, simply becomes an obstruction, a barrier to professional progress.

These thoughts may seem to some the merest platitudes, and, doubtless, they are the moral repetitions that have been wearily sounded, in other lines of work, through the centuries; but while this is true the need for this lesson is as apparent to-day as it was in the past, and is more necessary in a comparatively new profession like ours, where the tendency is to drop into a selfish vein of thought and practice. Stimulation is always necessary, so that he who reads may be influenced to make an effort to rise out of the quicksands of a selfish life that threaten to engulf him.

If individuals have been negligent in this particular, what may be said of those who are supposed to mould professional opinion? From what source does the dentist receive his professional and moral pabulum? In his undergraduate days this, doubtless, is given through his alma mater. If this mother has performed her whole duty, he should be grounded in well doing, but seed do not always fall upon fruitful soil, and, with the habitual carelessness of youth, the undergraduate eventually goes out into the world forgetting the moral training in anxiety for the financial well getting along.

The work of the teacher is thus transferred to others, and this duty falls properly to the periodical dental literature. Is it carried out there? Do we find the editors of the commercial journals endeavoring to lead the professional man, young or old, into paths that will rise upward to heights never before attained? The so-called trade journal, based as it is on commercial success, deals only with the practical details that lead to more satisfactory business results to those who own and publish it, and can never be a leader in the higher phases of professional life. The origin of these journals preclude any loftier motive, and hence the editorial management in the larger number rises no higher than the source from which they derive their inspiration.

America to-day is overwhelmed with periodicals ostensibly published in the interest of dentistry. This is, probably, not true of the majority, and it is questionable whether it is true of any.

They are all advertising media, and, as such, while often very valuable, they fail to do the work demanded by the higher thought of the profession. We need a different kind of literature. Will it be furnished?

The thought has been expressed in previous articles that it is doubtful whether this will come very speedily. The influx of the commercial kind of literature has reached flood-tide. To attract subscribers it has gone down to the dollar level. It will go still farther, and the journals will be given away just so long as capital can stand the crushing loss. The moral effect of this will be disastrous to the average dental mind. The dollar journal represents a lower standard, but to that individual it is *the* standard, the level of which is represented by the value placed upon it,—just one hundred cents. It seems evident to the writer that this low valuation cannot last, but that sooner or later there will come a demand for something higher, something more ennobling.

This journal was established to meet this want. For years, under the name of the *Independent Practitioner*, and for fourteen years under that of the *INTERNATIONAL DENTAL JOURNAL*, it has faithfully endeavored to raise the standard of a broader professional life, a life consistent with higher culture, dignified character, and consistent practice. It proposes to continue this, but will not descend to the methods adopted by our trade contemporaries. The importance of the dollar is recognized, for nothing can move without it, or its equivalent, but the time has arrived when it must be decided whether we are a profession or a trade, and the solution will come when the dentists of this country decide upon which side they will stand,—whether for professional or commercial progress. If for the former, then will be established a new standard of self-respect; but if for the latter, then the profession of dentistry, as such, will have ceased to exist, and in its place an aggregation of men and women whose chief thought will be to increase the size of the bank account. Is this to be the end of all the labor devoted to dentistry through several centuries? Let the answer be that, come what may, the twentieth century must not close with a dental profession dependent upon a periodical literature that represents nothing but a commercial life. Will the dentist of the period work truly towards this end? May each individual reader ponder upon the importance of this query, and then make it part of his life-work to join with others in this

most important effort to establish a more elevated standard of professional thought and practice.

DENTAL HOSPITAL, SYDNEY, NEW SOUTH WALES.

SYDNEY, New South Wales, Australia, has the honor of being the first to establish a strictly "Dental Hospital." There have been others in this country and England that work for the poor, but these are in connection with dental colleges.

The official opening of this institution took place on the 17th of October, 1902, His Excellency the Governor Sir Harry Rawson, presiding."

The object of this institution is "To provide *gratuitous* advice and surgical aid and other treatment in all diseases of the mouth and teeth to the *poor and necessitous* who are unable to procure the same at their own expense, and whose cases are suitable for dental treatment, with or without recommendation."

This is to be supported by subscriptions and donations.

A long list of dental surgeons and assistant dental surgeons seem to insure satisfactory work for the poor, and our best wishes go with this experiment, for it is one of the most important efforts to relieve suffering.

The question has been much discussed in this country, and several efforts have been made in this direction, but, so far, with no satisfactory results. The reasons for this are well understood and apparently insurmountable. This work for the poor has, therefore, been left to the college dispensary, and in our large cities has been very satisfactory to those of very limited means. The *very poor* cannot afford the time for prolonged dental operations.

NEW YORK REGENTS AND THE D.D.S. DEGREE.

THE Regents of New York met at Albany, Thursday, December 4, 1902, to consider the question of transferring the M.D.S. degree to that of D.D.S. (Doctor of Dental Surgery).

The committee to whom this matter had been referred made

a very able report, from which the following quotation is made: "That legislation permits the Regents to do that which the colleges either cannot or will not do, to detract the degree by the exchange proposed. For the Regents to do this would be for them to contravene their settled policy and to abuse the trust reposed in them as guardians of the degrees of the colleges over which they have supervision."

Notwithstanding this strong statement, the Regents adopted the following resolution:

"*Resolved*, That the Regents direct the College Committee to prescribe preliminary requirements and rules for the examination of persons holding the M.D.S. degree, and that the D.D.S. degree be conferred on successful candidates who pay the prescribed fee and meet all other requirements."

While it is possible that the Regents could not give a flat refusal and keep within the law, the conclusion is one that will fail to satisfy either those in favor or in opposition, and it certainly places the Regents in a false position. If the law of the State of New York gives this body the power to confer the degree of D.D.S., then it has equally the authority to confer any degree. It seems hardly possible that such power could have been given by the Legislature with a clear comprehension of its far-reaching possibilities.

The examination required by the Regents, if made equivalent to that demanded by the dental schools of that State, will be an ordeal that few of the older men, it is surmised, will care to undergo, so that there will not be many transfers if the examination is given into the hands of those competent to make it.

To an outsider it would seem that the permission given to the Regents to confer degrees should be rescinded. It is certainly a bad law, and, while not abused by the present Board, opens a very wide door for possible future wrong-doing under a less scrupulous body.

Bibliography.

ANATOMY AND HISTOLOGY OF THE MOUTH AND TEETH. By I. Norman Broomell, D.D.S., Professor of Dental Anatomy, Dental Histology, and Prosthetic Technics in the Pennsylvania College of Dental Surgery, Philadelphia. Second edition, revised and enlarged, with three hundred and thirty-seven illustrations. Blakiston's Son & Co., Philadelphia, 1902.

This work of Dr. Broomell was very fully reviewed when the first edition was published, and it must be gratifying to the author that the good opinion then entertained for this original work has been fully sustained by the dental reading public. Scientific works do not, as a rule, sell rapidly.

The author, "after due consideration," concluded to retain the ninety-three pages devoted to general anatomy of the mouth. This was criticised in the review of the first edition, and it is still the opinion of the writer that its retention is a mistake, for, however well prepared, it adds nothing to the character of the book, but does help to give it bulk, a serious evil in the production of a text-book. All students will get their anatomy from books devoted to that specialty.

The author says, "In the description of the teeth the terms 'superior' and 'inferior' have been changed to 'upper' and 'lower,' and the term 'palatial,' as applied to one of the teeth surfaces, has been discarded and the word 'lingual' substituted."

A chapter dealing with "Embryology of the Mouth" has been added, and also one on "Anomalies of Tooth Form and Structure;" also fifty-three new illustrations have been added, all of which, with one or two exceptions, are the original work of the author. This constitutes the especial merit of the book. Whatever exceptions may be taken to some of the author's conclusions, the book stands without an equal in dental literature. With the exception noted, that of anatomy, this work is the result of earnest, painstaking effort to reach truth by personal investigation, and then to give the results, not from drawings, in which the personal equation can never be eliminated, but from photographs and micro-

photographs, in the production of which the author has few if any superiors. No dental book with which the reviewer is familiar has ever attempted the same character of work, and it therefore stands not only unique in its originality, but in many respects the one work which may be referred to as a finality.

The new chapter on Embryology is a valuable contribution. While it may not contain much that is new, it does make the subject much clearer through the very beautiful illustrations that accompany the text.

The chapter on "Anomalies" is not quite so satisfactory to the reviewer. It is not to be supposed that the author has not given study to these conditions, yet this would seem to be indicated by his sub-chapter on "Supernumerary Teeth." He says, "All teeth appearing in the mouth in addition to the normal number are designated as supernumerary teeth. While the author has, of course, the right to classify, as he deems best, yet his definition is at variance with accepted views. Supernumerary teeth have a distinct typical character, which the writer described in 1863 (see *Dental Times*), and it is impossible properly to class these as the author has done. They have no resemblance either in form or general character to the supernumerary. Sir John Tomes called these in 1849 "supplemental," recognizing their normal character. The not uncommon occurrence of four lateral incisors, all perfect teeth, three perfect premolars, etc., should have been noted. It is true, the author as quoted writes of teeth "in addition to the normal number," but this is a very imperfect way of describing these extra developments, especially where students are involved. The writer has known of instances where one of these extra incisor teeth has been extracted through ignorance of the important fact that they are normal to that special jaw. It is to be hoped that when a third edition is called for this chapter will be rewritten, as it is not quite in character with other portions of the book.

THE CARE OF THE TEETH. By Samuel A. Hopkins, M.D., D.D.S.,
Professor of Theory and Practice of Dentistry in Tufts
College Dental School. D. Appleton & Co., New York, 1902.

This valuable book of one hundred and fifty pages opens with this basic truth in the "Introduction," that "Observations made during an active practice of over twenty years have convinced the

writer of the truth of two propositions,—first, that a large proportion of dental operations are preventable, and second, that a large proportion of the world's inhabitants are ignorant of how to prevent them." The author, with this very correct view in his mind, has written this little book in the hope that it may do something towards enlightening the minds of those who may be fortunate enough to read and absorb the contents of its pages.

In the first chapter on the "History of Dentistry. Uses of Teeth," the following statement is made, that seems hardly warranted by the experience of at least one of his readers: "College statistics show that the record of athletes in their studies is fully up to the general average of college work." While it is true that college men frequently point with pride to some exceptional man as proof of this assertion, it does not, as a rule, accord with the reviewer's experience. The amount of time spent in athletic work in colleges is certainly a serious loss to the individual. Some can make it up, others cannot.

Chapter III., on "Predisposing Causes. Lack of Exercise," is a very valuable and instructive essay upon the subject of proper mastication. There can be no question that the foods as prepared under modern civilization have had much to do with caries of the teeth, but is it true that mastication, or rather lack of mastication, is the prominent factor? Is it not true, even with our delicately prepared foods, that teeth become more dense as age advances? This, of course, does not militate against the idea that use increases quality of tooth-structure, but it does against that somewhat prevalent notion that prepared food will eventually produce an edentulous race.

In the chapter on "Food" there is this statement, that seems to require qualification: "We know that grain grown upon lands rich in calcium salts is of vastly greater nutritive value than that grown upon poor and exhausted lands. . . . Observations made of the teeth of a large number of school children in Sweden show that in the lime regions, where the grains contain a high percentage of calcium salts, the teeth are very much stronger," etc.

This may be true, but the author would have strengthened his statement by giving his authority. The experience of the reviewer in some extended practice in a region with a high percentage of calcium salts does not bear out his assertion; indeed, teeth seem to have been, by this experience, very little affected by the peculiar con-

ditions of the soil. It is a serious question whether those who so strenuously advocate "whole wheat food" are not forgetting a well-known fact that the average individual has more of lime in his system than is necessary for the nutrition of the hard tissues, and that to increase it may result in depositions of calculi in various organs, as well as masses upon the teeth. While it is true that with young persons a diet largely composed of cereals seems to increase density of tooth-structure, we yet lack laboratory experimentation to test this supposed fact of clinical experience.

"Bread," our author says, "should never be eaten until it is at least twenty-four hours old." This may be satisfying to our author, but it is feared his advice, however good, will pass unheeded, especially with those in our large cities who must depend on the baker. Home-made bread, when properly prepared, is satisfying twenty-four or more hours old, but the making of bread in the average household is almost a lost art. This does not invalidate our author's argument; in fact, it rather enforces it.

On page 90 the author, after giving a very satisfactory explanation of the trouble occasioned by the development of the second molar of the lower jaw, gives advice which to the reviewer seems uncalled for if his clinical observations are of any value. He has never met with a second molar in the lower jaw that could not be relieved by deep lancing. The reflex disturbance from this tooth is the result of pressure upon the inferior dental nerve and the reaction of this pressure upon the pulp in the passage of the tooth from the ramus to assume the direct vertical and normal position. The advice, therefore, in desperate cases to extract the first molar is not only uncalled for, but will result in a maze of future difficulty hardly possible to overcome.

The chapter on "Prevention of Caries or Decay" is the most valuable in the book. People must be made to understand that the only effectual cleaning of the teeth must be through the care given by the dentist at regular stated intervals, and the only way to effect this much-needed reform is to educate the dentist up to an appreciation of this fact. He has not yet reached this desirable stage of mental progress. This work our author has attempted to do. We could wish that this book could be placed in the hands of every young mother for the good this chapter alone might accomplish.

Every dentist must agree with the author, in the chapter on

"Toothache and the Teeth of the Poor," that it is a crying necessity that the poor should receive attention, but while this is true, there seems no possibility of this being effectually carried out, unless some of our millionaires will endow institutions for the purpose. It will never be possible for individual dentists to do this work, even if willing to give a day each week to this helpful service. The peculiarities of dental practice will act as a perpetual bar to this, and it seems useless to urge it. The work of the colleges in their dispensaries is probably the nearest approach to relief that we can hope to have. In some of our large cities this help has reached enormous proportions. The colleges do not all charge for the service. In the institution with which the reviewer is connected no charge is made for work in the operative branch, except that for gold operations. It is a question whether a small charge would not avoid the danger of pauperizing in this direction.

More space has been given to this little book than its size seems to warrant, but bulk is not always an indication of quality, and this is particularly true of Dr. Hopkins's work.

It is worthy to occupy a place in every family, and there it legitimately belongs. Whether we agree with it all or not, the tendency is towards a higher standard of health through more perfect sanitary conditions in the oral cavity; and that seems to the reviewer to be the most important thing given to the dentist for his work in the twentieth century.

Obituary.

VALLEY DISTRICT DENTAL SOCIETY, MASSACHUSETTS—RESOLUTIONS OF RESPECT.

It is with deep regret that this Society learns of the death of our esteemed fellow-member, Dr. J. Searle Hurlbut, of Springfield, on November 9, 1902, and we desire to express in a formal manner our appreciation of his life and a sense of the loss we have sustained.

Dr. Hurlbut commenced the practice of dentistry in Springfield in 1865, having graduated from the Philadelphia Dental College that year, and during all these years has stood firm for the

up-building of his profession. He was a member of the old Connecticut Valley Dental Society—the leading dental society in New England—from 1865 until 1895, when it was merged into the Northeastern Dental Association, of which his membership continued until his death. He became a member of the Massachusetts Dental Society in 1873, and was thus one of the original members of this the Valley District Dental Society. He was also a member of the American Academy of Dental Science, of Boston, of the Odontological Society of New York and of the National Dental Association. He was honored as president by the Connecticut Valley Dental Society in 1873, and by the Massachusetts Dental Society in 1874. When the dental law was enacted in this State, in 1887, he was appointed by Governor Ames a member of the Board of Registration in Dentistry. In 1891 he was made president of this board, which office he held until he resigned his membership in 1896.

By his strong personality, his broadly cultivated views, his refined manner, and dignified bearing he was one of the leaders in influencing an intelligent public to that just appreciation of the dental profession which later years have witnessed.

Resolved, That in the death of Dr. J. Searle Hurlbut the members of this Society feel they have sustained a personal loss and the dental profession one of its eminent members.

Resolved, That we extend to his wife our most sincere and heartfelt sympathy.

Resolved, That a copy of these resolutions be sent to his wife, to the various dental journals, and to the daily papers.

GEORGE A. MAXFIELD,
C. T. STOCKWELL,
N. MORGAN,

Committee.

MASSACHUSETTS BOARD OF REGISTRATION IN DENTISTRY—RESOLUTIONS OF RESPECT.

At a meeting of the Massachusetts Board of Registration in Dentistry the following resolutions were passed:

WHEREAS, In the sudden death of Dr. J. Searle Hurlbut, which occurred November 9, 1902, the Massachusetts Board of Registration in Dentistry

mourns the loss of one of the original members, who for nine years of its existence served with exceptional distinction, four years of which he was president.

Resolved, That as an examiner he displayed remarkable wisdom, fairness, and judgment, and showed wonderful tact in his dealing with men.

Resolved, That in his contact with his associates on the board, his kindness of nature and generosity of heart will always be remembered with the warmest affection.

Resolved, That we extend our sincere and heartfelt sympathy to his bereaved widow in this sad affliction.

Resolved, That these resolutions be entered on the records and a copy be sent to the widow of the deceased and to the several dental journals for publication.

(Signed)

JOHN F. DOWSLEY.

GEO. E. MITCHELL.

THOS. J. BARRETT.

DWIGHT M. CLAPP.

GEO. A. MAXFIELD.

November 24, 1902.

DR. J. SEARLE HURLBUT.

DIED of apoplexy, terminating a prolonged attack of Bright's disease, Dr. Jairus Searle Hurlbut, of Springfield, Mass.

Few men in Massachusetts will be more seriously missed from the ranks of dental workers than Dr. Hurlbut. He was not only one of the earnest men in all that pertained to the welfare of his profession, but he was one that possessed broad views of life outside of the comparatively narrow boundaries of dentistry. In whatever field of work he became interested he brought to bear upon it a cultivated intellect. In his personal intercourse with men he exhibited that kindly disposition that resulted in warm and devoted friendships. As a writer said of him, "He had the philosophical temperament, loved nature and his horses, and had learned to throw off the strain of exacting labors when away from the office. Travel had enlarged his outlook. He collected birds; knew where the wild flowers were to be found." Such a man would be out of place in the narrow conventionalities that environ inferior men.

He was active in the organizations of his profession, and became one of the State Board of Registration, being appointed to that position by Governor Ames. From 1891 to 1895 he served

as president of the National Association of Dental Examiners. He was a member of the Valley District and the Massachusetts Dental Societies, also of the Northeastern Dental Association and The New York Odontological Society.

Jairus Searle Hurlbut was the son of Asa Hurlbut, who was a descendant of Thomas Hurlbut, a soldier in the Pequot war in 1637. He was born January 5, 1842. He was one of six children. Four out of five brothers studied dentistry, but only two lived to practise any length of time. Dentistry owes much to the family of Hurlbut, for, in addition to these, two of his nephews have made this their life-work.

Dr. Hurlbut graduated from the High School in Springfield in 1860. The next five years were passed in the office with his brother, and in 1865 he went to the Philadelphia Dental College, from which he was graduated. He first located in St. Paul, Minn., where he practised for a year and then returned to Springfield to continue his work. He travelled extensively in this country and Europe, and spent many of his winters in Nassau.

In this world of ours death is inevitable. It is appointed for all men to die, but when the writer is called upon to express the last word for those who have lived truly to the best in their profession, he feels that the silent messenger has all too soon called those to higher activities who are much needed here to uphold the character of the citizen, the profession, and the work of human advancement. Of these, Dr. Hurlbut was a noble exemplar, and over his silent grave the writer would lay the wreath of appreciation and sympathy and recognition of a noble life ended on earth. If this work of Dr. Hurlbut remains as an incentive to his professional brethren to live as he lived, then his death will not have been in vain.

Dr. Hurlbut was married in 1868 to Miss Julia Ann Sampson. They had no children.

A large concourse of friends, business men, and the dental profession attended Dr. Hurlbut's funeral. He was laid away in Springfield Cemetery.

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Original Communications.¹

THE REGENERATION OF THE PULP.²

BY DR. ARTHUR R. DRAY, PHILADELPHIA.

I FEEL that I am taking much upon myself by appearing before you to-night, surrounded as I am by so many who could have presented a more acceptable and profitable paper. It is not in my mind to read or say anything for your edification. On the contrary, I have long since wished to have some light thrown upon a subject that has vexed me not a little, and I feel that I could not do better than bring my troubles to you.

The subject of my paper is "The Regeneration of the Pulp." While it really is my subject, it does not cover the entire ground that I am going to touch upon. The old bug-bear of dentists, old and young, is, I think, that knotty question, "pulp-canal filling," and it is with this topic in view that I wish to consider "The Regeneration of the Pulp."

The many methods of pulp-canal filling have been so frequently and ably demonstrated by so many eminent men that to-day "pulp-

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read before the Academy of Stomatology, June 24, 1902.

canal filling" is considered a matter of fact, and a more or less easy operation; but at the same time the truth remains that the trials are many when a successful root-canal filling is the goal sought for. Access to canal; location of canal; size, position, and direction of canal; entire removal of pulp-canal contents; tortuosity of canal, etc., and when the canal is free from all pulp-tissue and débris the battle is only begun, for the filling of the canal is, after all, the most tedious part of the operation. We have heard of the many forms of root-canal filling-materials, from the simple cotton to the gold-foil. They all have their advocates. Notwithstanding the many methods for canal preparation and filling, and the records of success, the past knows of many unrecorded as well as of many recorded disastrous failures. In the hands of the very best many an obdurate tooth has refused to respond favorably, many a patient has been lost, many a restless night caused, and many a regret on both sides expressed.

I am not here to point out the redeeming points of this or that method or material, but to suggest one more method,—namely, to allow the regenerated pulp to be the root-filling. I do not lay claim to originality in this method, but at the same time I must say that I have not succeeded in finding any literature on the subject, nor have I succeeded in finding any who have thought of the same from a practical point of view. While adding to the list of methods which is already legion is in a sense making matters still more complicated, I lay claim to simplicity inasmuch as permitting the regenerated pulp to fill the canal is, so far as human efforts are concerned, simplicity itself.

The regeneration of the different tissues of the animal economy is as old as man, and nature when injured puts forth a silent effort to repair defects. Surgery from its earliest conception has to a more or less degree made use of this fact. This holds as good in dentistry as it does in surgery.

A little over a year ago I was assisting at an operation that Professor Laplace, of the Medico-Chirurgical College, was performing for *tic douloureux*, and which consisted of the removal for the second time of the inferior dental nerve. A few days previous to that time I had had charge of a very aggravating case of apical abscess due to defective root-filling. I had taken all the precautions and care that I knew of, and yet met with ignominious defeat, and was nigh catching at a straw, as it were, for help. At the next

appointment with my patient, having previously relieved the abscessed condition by the removal of the root-filling, which was of the ordinary gutta-percha variety, and having dressed the tooth once or twice, I isolated the same, which was by this time in a normal condition and free from all soreness. Using the rubber dam, I very carefully sterilized all parts with creosote and a mild bichloride solution; then, after drying, I moistened the pulp-cavity and canal with sterilized glycerin. I then capped the canal-chamber as though I were capping a live pulp, hermetically sealing all with Harvard cement. My patient has never had any trouble with the tooth since, and I am satisfied that that canal has regenerated pulp in its interior, as the tooth responds to heat and cold and in all respects acts like the so-called live tooth. Since then I have tried numerous experiments on pulps with gratifying results.

I will mention one instance that gave me great satisfaction. I had a very sensitive molar that I wished to cover with a crown. The tooth had a live pulp, and my patient would not permit me to cut it to shape, so I resorted to extirpation of the pulp, which was perfectly healthy, by the pressure method, using vapocaine. I here also capped the pulp-chamber and canal as mentioned in the previous case. My patient then permitted me to cut away all the tooth-structure that I desired to remove, and I crowned it. So far all is well, and the crowned tooth has given no trouble.

The last case I will mention was the most successful, or rather the most convincing of all. I was preparing a cavity in a superior lateral incisor for a gold filling, when I accidentally broke through into the pulp-chamber. I immediately removed the pulp and again capped over the empty chamber and root-canal and put in the gold filling at the same sitting. A month afterwards I was filling the same tooth on the distal surface, when I again accidentally drove an instrument into the pulp-chamber. The pain experienced by my patient was very severe and hemorrhage was profuse. I removed pulp number two from this one and the same tooth, and not wishing to run any further risks with my patient, I filled the root-canal and cavity at the same sitting. I have given you three successful cases; I have had two complete failures, but I feel sure that the fault was in the manipulation rather than in the method. In one of the faulty cases I had suppuration; in another severe pain was experienced very much like that of the ordinary hyperæmia of the pulp.

As I said before, I am not here to do any teaching, and I do not make any positive assertions, but I do feel that the topic that I have presented this evening is one worthy of consideration. I am still doing a little work in this line, and trust to continue the study with the hope of being able to report better success at a later date. I am exceedingly sorry to say that my histological knowledge of the regenerated pulp is slight, being based chiefly upon the rough examination of the regenerated pulp of the second case I have cited. I found the pulp highly sensitive and exceedingly vascular, and consisting largely of a body tissue resembling the embryonic connective variety, granulated in places, with the blood-vessels and nervous elements well demonstrated. One point puzzled me, and that was the outer surface or coat of the organ. I could not make out what the covering was; it seemed well defined and to all appearance was epithelial in variety, and yet I do not understand how that could be.

Dr. Black claims that hypertrophied pulp is covered with epithelium, but I cannot satisfy myself here either, not being able to accept his theory that this epiblastic tissue comes from the epithelium on the gums by grafting. The blood-clot, should there be any, which is very possible, plays no part in the formation of the new tissue, but is supplanted by cellular infiltration, which forms fibrillar connective tissue by proliferation of endothelium of vessels. As to whether the neuroplasm of the main nerve-trunk is responsible for the formation of new nervous tissue, or what the functional activity of the regenerated organ is, I cannot say anything as yet. I do not see how it can be credited with the ability to form secondary dentine, and yet we cannot say that the odontoblastic layer of cells does not reappear with the rest of the regenerated organ. The second pulp can surely calcify, should nature care to bring about such action.

The advantages of a regenerated pulp lie in our being spared the time and trouble of filling the root or roots and in keeping the tooth alive internally as well as externally.

Have not dentists been too fearful about exposing and treating pulps? The timidity has been brought about by repeated failures and sorry consequences, but can we not trace it to the same cause to which the surgeon attributed the one-time hospital gangrene,—namely, the lack of antiseptic principles?

Pulp and pulp-canals should be treated strictly antiseptically

as to instruments, hands, rubber dam, medicaments, and all materials; in short, as does the surgeon so should do the dentist.

SYPHILITIC INTERSTITIAL GINGIVITIS.

BY EUGENE S. TALBOT, M.D., D.D.S., CHICAGO.¹

IN the past year three patients with syphilitic infection of the mouth have been referred to me. A young Swedish domestic, twenty-four years of age, contracted the disease by kissing. Syphilitic patches appeared upon the lower lip the size of a large filbert, involving the gums and alveolar process, with considerable uneasiness and pain at the roots of the teeth. The ulcer was nearly healed when she came to me.

Mr. H., thirty-two years of age, also contracted the disease by kissing. The central lesion appeared at the lower lip. When I saw him secondary syphilis had caused his body to become completely covered with a rash. Large mucous patches covered the mouth. The gums and alveolar processes were of a deep-red color and the teeth were sore to touch.

Mr. A., twenty-seven years of age, clerk in a wholesale dry-goods house, became infected by moistening labels with saliva. Although under treatment, his face and body became completely covered with eruptions and the alveolar process and gums were badly inflamed. The cervical glands in all cases were enlarged.

These cases are receiving special local treatment by me. This consists in cleansing the teeth (a special set of instruments are kept for this purpose) and the local treatment of iodine. Mrs. H., the case I reported in the *INTERNATIONAL DENTAL JOURNAL* some time ago, returned with slight uneasiness in the alveolar process at the third right inferior molar. The usual iodine treatment is being given. It would seem, from the experience I have had with local iodine treatment in syphilitic interstitial gingivitis, that though relief from uneasiness and pain is all that one could wish, it is apt to return unless systemic treatment is adopted.

The uneasiness and pain in the alveolar process about the roots of the teeth is not confined to syphilitic interstitial gingivitis alone.

¹ Fellow of the Chicago Academy of Medicine.

Interstitial gingivitis from whatever cause will produce the same symptoms, including redness, due to the inflammatory process and bone absorption extending throughout the alveolar process.

In the lower animals this uneasiness and pain is best illustrated by the cribbing of the horse returned to the stall after a summer's outing.

REPORT OF A CASE OF GIANT SARCOMA.¹

BY MURDOCK C. SMITH, D.D.S., M.D., D.M.D., LYNN, MASS.

It is not often that a little girl of less than twelve years of age is presented to this Society twice.

Late in the fall of 1894 an alveolar abscess developed, and before it finally healed up she lost the greater part of the inferior maxillary, from the region of the cuspid to the articulation, also the germs of the two bicuspids and the first molar. The attention of this Society was called to the extensive loss and great deformity at that time, but you will see that there was but little deformity prior to the second operation.

February 13, 1902.—In consultation at the Union Hospital, Lynn, I found a little growth on the mucous membrane about a half-inch in diameter and about one-eighth inch in elevation; it looked like a small piece of liver, apparently coming from the periosteum, situated on the anterior surface between the central and lateral incisors, with those teeth noticeably separated. The history of the case is that it had only been noticed about two weeks, and the patient had felt no pain. The surgical staff were almost unanimous in pronouncing it a little granulation tissue from a slight necrosis of the alveolar process. The writer refrained from making a diagnosis, on the ground of the separation of the teeth. Under ether the growth was removed and the bone curetted. A few days later the pathologist reported giant-cell sarcoma.

March 12.—Took her to Dr. Whitney at the Massachusetts General Hospital. At that time there was a decided return of the growth; still the doctor did not think there was any great hurry for a second operation.

March 23.—It has been growing so rapidly that we have decided

¹ Read before the Massachusetts Dental Society, June 4, 1902.

to operate at once, which was done at the Union Hospital, assisted by Drs. Lougee, Haywood, Ryder, and Smith. The mucous membrane was opened high up on the lip and the knife carried into the deep tissue almost to the skin and dissected well down on the body of the jaw; on the lingual surface the knife was carried just below the gingival border, and with a periosteal scaler the soft tissue was dissected from the bone; then with a circular saw and the trephine the bone was easily removed, well down below the alveolar process; the bleeding was mostly capillary, and after the large vessels were secured soon dwindled down to an oozing. The bleeding surface was cauterized with five per cent. solution of pyrozone and the wound packed with iodoform gauze.

April 3.—Left dressing out; healed up nicely.

In this case I wish to call attention to the amount of bone that can be removed and show so little deformity.

As we send all specimens of growth that we remove from the mouth to the pathologist this was sent after the diagnosis was made, and the following is the pathologist's report.

"The specimen from the girl aged eleven years removed March 23 consisted of a portion of the left half of the lower jaw, contained four teeth, and covered an area of about one centimetre, in which was a soft, reddish new growth.

"*Microscopic examination* showed the growth to be composed of relatively large irregularly rounded and spindle cells with little intercellular substance, among which were cells of a larger size, and contained from one to ten or more nuclei.

"*Diagnosis*.—Giant-cell sarcoma, probably of periosteal origin.
(Signed) "WM. F. WHITNEY, M.D."

IMPORTANCE OF ORGANIZED EFFORTS.¹

BY GEORGE M. HOLDEN, D.M.D., HACKETTSTOWN, N. J.

MR. PRESIDENT AND GENTLEMEN,—Organization is always necessary to bring out the best that is in every profession. Dentistry has much to be grateful for in the large number of well-

¹ Read before the Harvard Dental Alumni Association, June 23, 1902

organized societies and associations that have contributed and are contributing so much for our profession. In this progressive age nearly every branch of human activity has found the importance and value, if not the absolute necessity, of organized association, and we have reason to feel proud of the position that our profession occupies in this advancement.

If the meeting together in a social way only were to be considered, the benefits obtained would be many; for in this way many ideas are acquired that are helpful in our every-day practice, and invaluable friendships are formed. There is no one who cannot, out of his own individual experience, impart some help to others. Friendships have been formed at dental society meetings that could not be more true. I have in mind one instance that may not be out of place to mention here. It was the testimony of an elderly gentleman who had labored long and faithfully at his profession, and by fortunate investments had accumulated considerable wealth. Misfortune overtook him; the savings of a lifetime were suddenly swept away. His description of the practical comfort and unsolicited assistance he received from friends he had made in dental societies was most convincing of their value. He was comforted, encouraged, and stimulated; he had a taste of something more valuable than wealth; he felt the depth and warmth of true friendship.

The carefully planned meetings include other features that serve as a substitute for some of the advantages of the dental school, or, rather, a continuation of them. We have in these the privilege of hearing papers read and discussed by men who have given especial thought to the subjects presented, and the impressions made upon us when listening to these are deeper and more profitable than when we read them in the publications. We have clinics to demonstrate new ideas, and to teach new methods of performing the ordinary operations, and the practical value of these is often great. We also have exhibits that contain the latest inventions and improvements, arranged in an attractive manner; and these, coming from so many sources, enable us to make comparisons and selections expeditiously.

When we are deprived of the devoted supervision of our professors, instructors, and demonstrators, and have to depend upon ourselves to solve the problems that confront us, we find difficulties unthought of, and we long for their friendly counsel. It is then,

perhaps, that we first fully appreciate what they have been to us, and many of us have to seek help elsewhere. There are many good magazines that contain much for our profit, and these are indispensable, but they alone will not suffice; we must unite with others in personal efforts to promote our interests and the interests of our profession.

It is important that we do this as soon as possible after leaving the dental school, that the continuity of our studying may not be broken and that our growth may be stimulated. Probably none of the young men who will leave this place in a few days to commence practice will choose locations that are too far from the meeting-place of some dental society to make joining it impossible or impracticable; and, as it is a duty as well as a privilege to do all that we can to maintain these institutions whose objects are so worthy, it is earnestly hoped that they will avail themselves of their advantages at the first opportunity. Many have neglected this at first, and when urged to join later, express regret that they did not join when they began practising. Some become so well satisfied with their own efforts that they say they cannot see how they could be benefited, and some, by departing from the right course, become ineligible. The last danger can be eliminated here, of course, for we well know that your environment during your course of study here has been such as to inculcate the highest principles.

The attainments of men vary in proportion to their ability and application. Some have to acquire by hard work that which comes comparatively easy to others. Each of us, however, can strive to do the best he can, each of us apply himself to hard work; and we can all improve our ability by faithful application, and all be helped by united effort.

It should not be from entirely selfish motives that we assist in the support of these organizations, but that we may be able to help in maintaining and extending their usefulness and continuing their activity. We know that they were founded on pure principles and have become helpful by the self-sacrificing devotion of men who have the best interests of dentistry at heart.

If we study the history of our dental societies and associations, we find that the brightest lights of our profession have been encouragers and promoters of them. We find that they have given freely of their time and energy in making experiments and investigations, and presented the results of these before them; we find

that they recognized their importance as an elevating influence and considered it a privilege to attend their assemblies, aid in their support, and add to the interest of their meetings.

Whether dentists join in united efforts or not, they do not fail to feel the helpful influence of them, and they all profit by them in many ways. The scope of the dental societies is so wide that it embraces nearly every department of our calling. Some suggestions made and ideas explained at conventions have shown demands for improvements and new inventions, that have caused the supply that benefits all.

There is a certain amount of unfortunate indifference in regard to the importance of becoming affiliated with the societies. There are some who attend the conventions, profit by them, have a good time, and yet fail to identify themselves with societies. Some search for imperfections, magnify and criticise them. What organization exists that has not imperfections in it, and that could not be better? It is sufficient for us to know that their principles are good, and that there is enough good in them to make them helpful. It is not necessary to have everything we see and hear appeal to us, but there is always enough good that will, and we can discriminate.

Then there may be a feeling among some that the societies are so large and successful that they do not need additional members. This is a mistake, for there is inspiration in numbers, and the enthusiasm of the young is needed as well as the wisdom of the experienced. New societies are being formed all the time, and these should be encouraged. The field is large and the opportunities for usefulness are numerous and constantly increasing. The societies need the co-operation of every reputable dentist.

We should not simply be satisfied to have our names in the lists of members, but we should exert our influence in their behalf by describing their advantages, testifying to the help they have been to us, and urging our brothers to come with us and partake of the pleasure and profit they provide.

Let us all do everything we can to emphasize the importance of becoming identified with organized efforts to promote the interests of the profession we love.

WINNING THE CONFIDENCE OF CHILDREN.¹

BY EVAN P. WENTWORTH, D.M.D., BOSTON, MASS.

MR. PRESIDENT AND FELLOW-MEMBERS OF THE HARVARD ODONTOLOGICAL SOCIETY,—When a student in the school my first patient was a boy of six years of age. He came to have a cervical filling in the buccal surface of a superior temporary molar. At ten o'clock I began putting on the rubber dam, afterwards excavating the cavity. At twelve o'clock two instructors pronounced it ready to fill. At one o'clock I dismissed the patient, having finished the filling. As you can see, I had some time to think, and so did the patient, who returned the same week for another filling.

From that time I have been much interested in the proper care of children who come to my chair. I bring to you, therefore, as the subject of my paper this evening, "Winning the Confidence of Children."

Experience has taught me to observe that the greatest stoicism or fortitude is sometimes exhibited by very young children, even though their constitutions suffer in consequence; others cry aloud at the least element of discomfort, which is readily elevated by them into a conception of agony.

Other children and certain families are thrown into spasms or convulsions by very little things, whereas others under closely analogous circumstances never manifest any perturbation of the centres of motion. Undoubtedly some children—indeed, some families and races—are relatively insusceptible to pain, and differ even more widely in their capacity to endure.

In my list of patients I find quite a large percentage are children under twelve years of age. Those never having had previous professional services, as a rule, have caused little or no trouble in performing all the operations necessary. Where young patients have been to a fellow-practitioner, and are perfectly satisfied, we seldom hear of them, but some who are not frequently call upon us, oftentimes taxing our patience and ingenuity to the extreme.

It has occurred to me many times, as it probably has to all the members of this Society, that there is a field for our labors before the little patients come to our office. It is well to counsel

¹ Read before the Harvard Odontological Society, March 27, 1902.

with the mother concerning her child. She can readily see what is invisible to the most shrewdly observant practitioner. Her testimony is always to be courteously accepted, but not necessarily her conclusions. With some instructions she can aid very much in a previous preparation of the child's mind. She may impart some characteristic which will help in forming an idea of the control she has over it if very nervous, also cause of mental disturbance, if any, when care of teeth is mentioned, all of which may have an important bearing on the situation.

Parents should be induced to take a child early to the dentist, that the first visits at least may be painless. Some children have not the capacity to understand why they are taken right into the dental chair and operations begun without a previous acquaintance, with new surroundings and a stranger dictating to them. Many times they do not submit to the treatment they receive. Some would blame the child, but in reality he is not always at fault.

A patient who has never visited a dentist professionally has no reason within himself to fear the treatment he is about to receive, unless suffering from some pathological condition. Therefore, if only simple operations are to be performed, and he is nervous and scared about something, why is it? I deduce the following principal reason: The operator has not properly led the patient up to the situation, gradually overcoming this fear or that, as fast only as the patient can adapt himself to the circumstances.

When a child comes to meet you, especially if against his wishes, he will look you directly in the eye, and, no matter if he be three or ten years old, before his critical examination is finished decides whether he likes you.

At the first sitting do as little as possible, a simple filling or cleansing, sometimes only an examination, showing the patient the use of some instruments, whether or not the case requires them. If possible accomplish something the patient fears to have done, always dismissing when the best impression is formed and confidence is established. When anything approaching antipathy arises in the child's mind, it must be immediately overcome or a hasty retreat made to some point where he was well satisfied with proceedings.

In some manner pleasing to the patient, on the railroad of the mind the regular train of thought must be side-tracked, while a

special is given the right of way until the objectionable features of the operation have been passed.

Allow me to cite a case in my own practice. Patient five years old, with abscessed temporary molar and several simple cavities. I opened the cavity in the abscessed tooth, and put in dressing and cotton sandarach. Stopping there, I dismissed the patient without trying to form any particular impression upon him. At the second visit, when he was not suffering, I was able to interest him with stories, excavate and treat the tooth. At the conclusion of this visit he returned home and appealed to his grandmother for a pail with a handle to it. Upon questioning as to what use he might put it, he said, "Well, I want a pail with a handle and a string." These were brought, and he immediately tied the pail to the left arm of his high chair, and, taking a few steps back, said, "There! that's for folks to spit in." He also got his mother to write a sign on a card, "Robert Blank, Dentist," which he put in his chamber window. Such was his enthusiasm for the profession.

There are practitioners we hear about sometimes who do not favorably impress young children. They cannot depart from the business-like method of handling them as they would any other patient. When a little one, from want of judgment or discretion, should become restless, and even resent some methods of procedure, they still persist as though the operation must be finished in a certain time.

When this patient comes to you for his next treatment he is in a far different state of mind than when he went to visit the above type of operator. You might like to give some expression to your feelings, as a man I once heard of in our late war with Spain. After two days' marching and no food, General Lee's division camped for the night. One of the staff-officers, after vain attempts to sleep with the ground for a bed and a saddle for a pillow, was heard to remark, "Damn that man Columbus for discovering us anyhow."

I have a patient who took her little girl of seven and a half years to a local practitioner to have a tooth filled. According to the mother's description, the child had no fear of the operation and showed none at the treatment received of the family dentist previously. The operator handled her in as matter-of-fact and gruff way as he would an adult who seems never to have his feelings hurt. She showed some uneasiness, and he persisted in the

operation, even resorting to scolding as she became more irritable. In a few minutes he had the child in such an hysterical condition that the mother took her to a friend near by. An hour elapsed before the child could be taken home. Now, after two years, when dentistry is mentioned she says, "I'll go and have them pulled, but not filled, mamma."

Another case I have had, similar to the above when it came to my hands. One of my patients told me of a child who was so afraid that the mother could not get her to a dentist. She had visited one and had a filling or two some time previous, but when the matter of a visit to the office was again mentioned, the child got worked up into such a nervous state that the mother gave it up for fear of a very unpleasant experience. She was having trouble with her teeth, and what could be done? I said, "It is time your little girl had her mouth examined;" and, by the way, this child I had seen outside the office several times anticipating that some time she would visit me professionally. To get her in a proper attitude mentally, each time we met I gave her some little attention at the appointed time. This mother with her two children and a neighbor friend, Dorothy, announced themselves at my office. I met them in the reception room. After acknowledging all, I turned my whole attention to my little three-and-a-half-year-old acquaintance. Taking her on my knee, I began talking to her, fully aware I was being watched very critically by her little friend. In a few moments I was talking about a ride, so I took her to the chair, leaving the rest of the party in the reception room. Shortly the mother of my little patient came in and said, "Dorothy remarked, when you left the room, 'Why he don't seem like a dentist!'" This was an expression of what I wished to bring about in the child's mind, and I said, "Let them come in." When my little patient had delighted to ride up and down in my chair I began getting ready to cleanse her teeth. I showed her all the things I used, and tried the revolving rubber disk on her fingernail. Then I cleaned her teeth, giving her my whole attention, as though no one else was in the room. When this operation was finished, the boy's teeth were examined and cleansed. Then his little friend Dorothy had hers examined and cleansed. She got into the chair while I was preparing for her, and no one had even suggested that she was to have any work done. After the examination and cleansing the company departed. At the subsequent

sittings our acquaintance became so intimate, through stories and talks which interested her, that cavities were prepared and filled and all necessary work finished.

Sometimes I have found that a talk on slight of hand, or appealing to the curiosity will serve to place a child in a passive state. A boy who came to me with his brothers and a sister seemed to be the doubting Thomas. As he stood beside the chair I said, "Now, you would be surprised if I should look in your mouth and tell you your name and how old you are." I had never seen him before, but as I was examining his brother's mouth his little sister whispered his name to attract his attention. When he came to the chair I studied his mouth and slowly wrote down his name on my examination blank. He became so mystified that during this sitting and all day until evening his curiosity was so aroused that any thought of my hurting him never seemed to enter his mind, and no trouble was experienced at future sittings.

There are some children who, having had some service rendered them, retain impressions of some objectionable features of the operation. These seem to magnify in the imagination as time elapses. Nothing about the former operation was very painful, yet these worst features loom up in the imagination, so that he shrinks from having attention given the teeth.

It is necessary to go still farther than simply doing the work. Try to place all objectionable features so remote that they will not be retained, at the same time creating an enthusiasm for beautiful teeth.

Whatever the age or intelligence, when the child has not the judgment to control himself, he can usually have his mind occupied with something which most interests him, or information imparted which diverts his attention, so that enough can be accomplished to show that even dental operations may be done and the patient have pleasant memories of the time in which they were performed.

I have called attention to some things that are necessary to the beginning of a child's education regarding the care of the oral cavity. There are many methods of handling children, but they must all be tempered with gentleness, kindness, and patience.

Sometimes I am reminded of a preacher of whom I once heard; not always can I agree with him, however. He had just been blessed by the arrival of a son and heir. His parishioners were to give him a customary donation party. As usual at such gather

ings, the exercises were to be opened by prayer. Some of the unregenerates of the congregation made wagers as to which blessing he would speak about first, the new arrival or the many gifts. The prayer ran thus: "O Lord, we thank Thee for this timely succor."

Gentlemen, I thank you for your kind attention.

Reviews of Dental Literature.

PARAMIDOBENZOIC ACID ETHER (anæsthetic of Ritsert), a non-poisonous substitute for cocaine. By Dr. Schaeffer-Stuckert, Frankfort-on-the-Main.¹

The author states the common desire for a local anæsthetic possessing the efficacy of cocaine without its toxic quality, and says that Dr. Ritsert has come near the fulfilment of this desire in the production of the ethyl-ether of paramidobenzoic acid, the formula of which is $C_6H_4 \begin{smallmatrix} \text{NH}_2 \\ \text{COOC}_2H_5 \end{smallmatrix}$. This compound he produced in 1890 and recognized as a local anæsthetic. Owing to its insolubility in water, however, for some time no practical use was made of the drug. Later, interest in it was revived, and a number of prominent medical men made use of it with success. The author was requested by Dr. Ritsert to determine its value in dental practice.

The drug is described as a white, odorless powder, soluble with difficulty in water, easily soluble in alcohol, ether, chloroform, acetone, also in fats and oils. The author's first experiments were made with an oily solution, though this was not satisfactory for subcutaneous injections. Later, Dr. Ritsert found a way to make watery solutions, and a one-quarter to one per cent. solution was used in subsequent experiments. Sundry experiments upon animals conducted by reliable people are mentioned to prove the non-toxic quality of the drug. Small and medium doses produced no harmful effect, and enormous doses only a slight effect, which resembled that of phenacetin, to which it is chemically allied.

¹ Para-Amidobenzoesäure-Ester (Anästhesin Ritsert), ein ungiftiger Ersatz für Cocain, von Dr. dent. surg. Schaeffer-Stuckert, Zahnarzt in Frankfort a. M. Deutsche Monatsschrift für Zahnheilkunde, 22. November, 1902.

The author's investigations have been directed towards proving the usefulness of the drug for the following purposes: 1. For subcutaneous injection in the extraction of teeth. 2. For the painless destruction of the pulp in combination with arsenic. 3. For the treatment of pain in tooth-sockets and wounds.

For the purpose of tooth extraction, one cubic centimetre of a one per cent. solution is used, and the author states that the results are very satisfactory.

For the destruction of pulps, a mixture of equal parts of arsenic and the anæsthetic in question, combined with oil of cloves, is used. This paste, when used under Fletcher's cement, or any other covering which is devoid of pressure, produces, inside of twenty-four hours, a painless destruction of the pulp.

In the treatment of pain in tooth-sockets and wounds the author applies the drug in powder to the affected surfaces, sometimes mixing it with dermatol, and finds the greatest satisfaction in such use.

This preparation is sold by Apotheker Weinreben, Frankfort-on-the-Main, Germany.

Reports of Society Meetings.

ACADEMY OF STOMATOLOGY.

A REGULAR meeting of the Academy of Stomatology, of Philadelphia, was held at its rooms, 1731 Chestnut Street, on the evening of Tuesday, June 24, 1902, the President, Dr. R. Hamil D. Swing, in the chair.

A paper entitled "The Regeneration of the Pulp" was read by Dr. Arthur R. Dray.

(For Dr. Dray's paper, see page 81.)

DISCUSSION.

Dr. E. T. Darby.—The paper is certainly a novel and interesting one. There is much in it that is new to me. I did not suppose that pulps that had been extirpated could regenerate and fill the pulp-chamber. It was the practice of old Dr. Maynard to simply cover over the canal openings after pulp-extirpation, and

he claimed that he had as much success from that method as he had in the later years when he filled the pulp-canals. One would now question very much the wisdom of putting a diaphragm between the pulp-chamber and the cavity of decay, leaving the pulp-canal and chamber unoccupied. I have never yet seen an instance in which I thought the pulp renewed itself. I have never opened into the canal of a tooth and found it filled with pulp after the extirpation of the original pulp. If I understand the essayist aright, he finds vital pulps, pulps that may be exposed the second time, that may bleed, and that are highly sensitive, just as when the pulp was originally exposed by accident. If such conditions exist, I have certainly learned something to-night.

Dr. E. C. Kirk.—As Dr. Darby has said, this is an absolutely novel idea to me. If a man should come here and say that after an amputation of an arm he had seen the whole arm regenerated, I should as readily believe the statement as that which I have heard this evening. The pulp of a tooth is not simply a tissue. It is a very complex organization, and I doubt, to put it mildly, whether such an organ is ever reproduced in the human being after it is once extirpated. I want to say this reverently, because here is a *confrère* who, with evident honesty of purpose, reports the results of his observations, and I honor him for his courage in doing it. Even though I say I do not believe that what he says is true, I do not in the slightest degree intimate that he is making a misstatement, but, judging from my own experience, I think he has made an error of observation. This amounts to a difference of opinion.

I would like to go over the cases he reports and see upon what phenomena he bases such an astounding statement. I can to some extent follow him in his case where he has extirpated the pulp and yet found some sort of tissue in the pulp-chamber after an aseptic operation, but when he reports a similar result in a case of infection of the apical tissue, that is beyond my ability to believe. I think he has made a mistake, yet I do not wish to discredit his position, because he has an evident honesty of purpose, and he certainly has seen something that leads him to this conclusion. We do not yet know all we should know about the dental pulp.

I once had a woman patient, about fifty years of age, who had lost a central incisor by resorption of the root, and when the tooth

was removed I split it open and found the whole pulp-chamber completely filled with a calcified mass. In the woman's younger days the tooth had been knocked out and had been replanted. The tooth was dislocated at a period of life when the pulp-chamber should be large, and yet before the loss of the tooth this deposition of secondary dentine must have taken place. I have always been at a loss to account for the condition. We cannot have the calcific deposit unless there is some vital union between the pulp in the chamber and the apical tissues which supply it nutrition. Dr. Dray's observations are extremely interesting, and are of such a character that I think they should be further investigated. I understand that he based his diagnosis of pulp regeneration in his infectious case upon the fact of thermal reaction. This is likely to be misleading unless very carefully done. The removal of the pulp a second time from a tooth has no counterpart in my experience, nor in anything I have ever read on the subject.

Dr. H. B. Hickman.—If the pulp were in truth a nerve, I feel that it might possibly regenerate. I do not believe that the temperature test can be relied upon. At the present time I have a patient who had suffered greatly from the sensitiveness of his teeth to cold. I devitalized the affected ones, and now when he eats sweet things, or cold substances strike them, he has pain. The man seems to have an ordinary amount of intelligence, and I do not think would deceive me. The pulps have certainly not regenerated, because the canals are filled with oxychloride of zinc. Nevertheless, there was decided sensitivity after their removal and until zinc chloride was applied about the necks of the teeth from which the gum had receded.

Dr. S. H. Guilford.—I am glad that the essayist has come forward and presented what he believes to be new, and while I admire the courage of his convictions, I do not think his convictions are right. It seems to me that in this case he has pretty largely jumped at conclusions, and that he has not had sufficient data upon which to base them. If I understand him correctly, he had five cases, three of which were successful and two were failures, which, I take it, was too small a number upon which to base anything in this line of work. If we analyze his work we will find that in two of these cases which he counts successful there was no pain. He does not tell us that he afterwards opened into the pulp-canal to ascertain whether the pulp was alive, but

he infers that there was regeneration of tissue because the patient experienced no trouble. In the third case he infers that there was regeneration because, upon going into the chamber a second time there was a free flow of blood and considerable pain. I think we can account for this in some other way. In just what condition the pulp-chamber may have been in in this third case we do not know, but we do know that frequently the vessels of the pulp become congested, and we may have a fungous growth of the pulp which is engorged with blood, and which when touched causes profuse hemorrhage. The only way in which to decide whether Dr. Dray's views are correct would be to extract the tooth, open and examine it. The fact that the tooth was sensitive to the instrument is not proof, because I have seen cases in which teeth that have been devitalized have appeared to be sensitive to the instrument. None of us have ever supposed that under such conditions the pulp-tissue had been reformed. I do not see how it can occur, because we have many elements entering into the composition of the pulp. In order to have a pulp we would have to have something more than a portion of the nerve itself. I think that by a little closer investigation the essayist will find that he was greatly deceived. We believe that the best treatment is to sterilize the canal and fill it as completely as possible in order to prevent future trouble. That a pulp-canal may be left vacant, covered over, and not give trouble is entirely possible. I would not consider it good practice, but that it might happen I can readily conceive. In regard to formation of new pulp-tissue, however, I do not think that such a thing is at all possible.

Dr. Kirk.—I do not think we know all we should upon the subject of sensitivity. It is quite possible that in these cases where we have extirpated the pulp we may have sensitivity of the dentine because of the passage of fibres from the pericementum into the dentine. To what extent this may occur we do not know, as it varies in different specimens.

The most curious thing to me is the essayist's report of finding something like pulp-tissue that was sensitive and vascular in a tooth from which he had extracted the original pulp. He does not say that it was a pulp organized as we understand it, but he found something that indicated regeneration in two ways,—in vascularity and in sensitiveness. I think the subject is worthy of further investigation, and should be made the subject of careful

scientific study. The only way to decide the point is, as Dr. Guilford has said, to make a post-mortem examination of one of these teeth. I cannot agree with Dr. Guilford that the observation is valueless because it is not based upon a larger number of cases. One such case proves the point if it is at all successfully demonstrated.

Dr. J. E. Libbey.—Though I am somewhat sceptical, I have come to feel that I am not ready to taboo anything until it is disproved. I thought, when the essayist was speaking, of how years ago it was said of the man who invented illuminating gas, that a poor Dutchman was trying to light the city of London with smoke. Well, the Dutchman succeeded. This idea of regeneration of a pulp after its extraction is so entirely new to me that I cannot combat it. I never saw a case of the kind, and it is the first case I ever heard of. I hope these investigations will go farther and that we may learn something. The matter of capping over and leaving empty the pulp-chamber and canal and its remaining perfectly comfortable for even a long time I can understand. We know that after filling, in many cases the pulps die, sometimes without any irritation whatever. I think few dentists like to open into one of those canals after it has been lying dormant for a long time. I have opened into them time and again, and could detect no odor, but I would expect under the old method of treatment to have trouble inside of the next twenty-four hours. I think further investigation will prove that there was not regeneration of the pulp. In regeneration there must have been previous breaking down of tissue. All histology teaches us that there are no lymphatics of the pulp. If there is a breaking down, and no means of carrying away the broken-down tissue, how can we expect regeneration? To me it at present seems an impossibility.

Dr. A. N. Gaylord.—I have the same feeling of great surprise expressed by the other gentlemen. The subject is something entirely new to me, and yet I think that if a few years ago some one had told us we could talk to a person several miles distant and be heard distinctly, we would have accepted the statement with equal hesitancy. I think this case as stated is improbable. There may be a possibility that this lateral incisor had two roots, and that the pulp was extracted at first from but one root, and that the second extraction was from the other root.

Dr. J. H. Gaskill.—I have been rather interested, but I cannot help saying that I doubt the correctness of the observations of the essayist. Possibly the appearance of regeneration might be explained in several other ways. I think we have had sufficient evidence offered to know that the pulp can resorb the tooth substance. I have had a number of such cases come into my practice. In one case the absorption had so affected the dentine below the gum margin that there was difficulty in removing the pulp. As to the return of sensitiveness to the molar tooth from which the pulp was extracted, I may say that the anæsthesia is sometimes so complete that there may be failure to extract the entire pulp, and owing to some portions remaining at the apex the tooth may later respond to thermal tests. I think it would be well worth while to explore a little farther into the condition of this tooth and see whether there has been any opening below the cavity.

Dr. W. H. Trueman.—The paper of the essayist reminds me of two instances in my own personal experience. The pulp of one of my central incisors was devitalized and extracted and the canal filled with cotton and creosote and allowed to rest for two weeks. During that interval I did not know I had a tooth. I reported to the dentist at the proper time, and he removed the cotton. At the moment he placed the instrument inside the cavity it felt as though there were ten thousand vital nerves there. The outside of the tooth was not sensitive. There was nothing to be done but to close up the tooth and allow it to rest for some time, when the root-filling was completed without the slightest inconvenience. It remained quiet for some time, but later began to give me trouble. Several examinations were made by different men. Finally Dr. Marshall Webb drilled into the tooth and found a mummified pulp. After removing this he treated the tooth, and for fifteen years it has remained perfectly comfortable.

While it is not safe to say that a pulp cannot regenerate, all knowledge we have seems to point to the conclusion that the idea is born of a mistake. We cannot tell in every case whether a tooth is vital or not. We may find a tooth which we know to be vital, yet does not respond to heat and cold; again, the reverse is observed. A case has been reported of an extracted tooth which was replaced and became quite firm. After some years, while a cavity in it was being excavated for filling, it was found to be

sensitive. The conclusion was that there had been a reunion of the vessels of the pulp and apical tissues. It seems to me it would be wise to hold the matter under consideration, and to remember what Dr. Miller said, that it takes at least ten years to express an opinion upon any new method of pulp treatment. It is well to go slowly.

Dr. Dray.—I am exceedingly glad that I did make the statement, for it has brought out many points of interest. I do not feel that it is for me to challenge what I have been told by more experienced men, but I do challenge the remark made by one of the gentlemen this evening, that nervous tissue is the only tissue that can regenerate. We can also have regeneration of blood-vessels, of connective tissue, and the organization of a blood-clot. This is a possible occurrence in a devitalized tooth, whether it is really pulp-tissue that is formed or not. I gave the history of the structure found in the tooth from which I had extracted the pulp. Something certainly had regenerated. It was more sensitive, more vascular, and the covering was different from that on the original pulp. I cited only five cases, but, as was stated this evening, one case if proved is a sufficient index to other possible cases. The lateral incisor did not have sensitive dentine, but did have this secondary growth, whatever it may have been. It bore a strong resemblance to the original pulp, but that does not count. It was, however, something tangible. A fungous pulp I also think indicates a regenerative possibility. I thank you for your kindly criticism, which has added data that will aid me in future observations.

Adjourned.

OTTO E. INGLIS, D.D.S.,
Editor Academy of Stomatology.

MASSACHUSETTS DENTAL SOCIETY.

(Afternoon session, continued from page 50.)

President Faxon.—We will now ask Dr. Edward C. Kirk, of Philadelphia, to give his lecture on “Saliva,” with lantern exhibits.

[This lecture is not in the report, but as it has been repeated

several times. Dr. Kirk prefers to refer the reader to his various papers on this subject. See page 229, Vol. XXIII., *INTERNATIONAL DENTAL JOURNAL*.—ED.]

DISCUSSION.

Dr. Samuel A. Hopkins.—Mr. Chairman, ladies, and gentlemen, I know that you might easily have chosen some one more capable of discussing this brilliant lecture of Dr. Kirk's, but I am sure that you could not have chosen any one who was more interested or more appreciative.

As I sat listening attentively to the paper and as I followed closely the lucid explanations of the methods employed in these investigations, it pleased me to think that this afternoon and this talk might mark a new epoch in dentistry, and that this Society might have the honor of being the agent through which this epoch-making knowledge should be given to the world.

Dr. Kirk has been too long a leader in dental societies and in dental literature to desire the flattery which might be pleasing and encouraging to a younger man. He has passed the age where personal advancement is preferred to scientific accuracy.

In this world the one thing supremely worth having is the opportunity, coupled with the capacity, to do a piece of work the doing of which shall be of vital importance to mankind. It has been Dr. Kirk's privilege to fill this proud position.

In 1895 Dr. Michaels, who deserves the gratitude of the profession for suggesting to the world this line of investigation, published a paper on "abrasions." Later he published another paper which was much clearer and went much farther than the first one. I read the first paper with much interest but I fear with but little understanding, and I believed myself most ignorant because I could not in the least understand what Dr. Michaels was aiming at. I found that this was the attitude of many other members of the profession towards this original announcement of Dr. Michaels's work. He seemed to me to be in the position of a man who has a valuable possession in some far-away country. He knows that it is there and he knows that it is valuable, but so far from being able to describe it to the world, he hardly knows what it looks like himself and scarcely knows how to get to it.

Dr. Kirk has cleared up this mystery and has given us an exceedingly clear insight into this new department of scientific research, and has to some degree shown us the practical application

of it. So far as it relates to general disease, this knowledge is bound to mark an advance in diagnosis and throw new light on general conditions that are at present but little understood. I am hopeful that the mystery surrounding the subject of abrasions will be cleared up, and that as a result of these investigations we shall be able to cope successfully with that distressing condition. So far as it bears upon our knowledge of caries (if I may be permitted to express myself in opposition to Dr. Michaels), I think we have not made any material advance by reason of his work. Further advances cannot be made without taking into consideration the work of bacteria and the products of bacterial activity. Physiological chemistry is also a science which must not be ignored in the study of mouth secretions and their effect upon the teeth. A knowledge of those wonderful energy transforming substances, the enzymes, the development of the wonderful ionic theory by which substances in infinite solution have an action which is denied them in their higher states and have also an affinity for the poles of a battery,—these and a further study of electrical action will have much to do with improvement in our skill in dealing with mouth conditions. What we need most at the present time is to have our knowledge catalogued and divided in such a way as to bring it within the dentist's power to use it. There is a great deal of general knowledge which never has a practical application in dental practice, because it is obscured by cumbersome theories and mystifying technicalities. This new knowledge which Dr. Kirk has brought to our notice may not be absolutely complete, but it certainly opens up the greatest possibilities for dental advancement.

The last perfect specimen of a locomotive could never have been built had not Stephenson built his smaller one; and while it is true that our knowledge of the oral fluids is by no means perfect, we may congratulate ourselves that such a splendid beginning has been made and that the future gives such brilliant promise.

Dr. James Truman, Philadelphia, Pa.—Mr. Chairman, I do not know that I have anything to add by way of discussion of this paper, for I have necessarily been almost daily in contact with Dr. Kirk's work, and have realized equally with him the importance of it. I regret, however, that the specimens are not plainer. It seems to me they have deteriorated. They do not present the marked characteristics that I have observed in them previously under the microscope. However, they are important; but the great

point to me in this investigation is the endeavor to solve the problem of what constitutes erosion and wherein it differs from abrasion. Our profession has been for the last fifty years endeavoring to understand these two pathological conditions. We have had a great deal of theory, but nothing positive. Now, some of these experiments, which he did not allude to here, seem to demonstrate very conclusively that the action of the acid in the mouth, as he has described, produces erosion upon the labial and buccal surfaces of the teeth. He has also demonstrated another point,—that abrasions in the majority of cases are the result of acid action. This has usually been considered to be the result of attrition alone. I think you all know that this cannot be true, but that it is by the action of a combination of acid and attrition. I have one criticism to make in regard to my friend's lecture, and that is where he makes use of the term "saliva." Now, I do not believe he has analyzed saliva. I think we are making a mistake in the way of terms, and should always in my judgment call this the oral fluid. Saliva cannot be secured except by special effort. I have great faith that we will know more in the future from Dr. Michaels's and Dr. Kirk's work. We practically knew nothing of the oral fluid prior to these investigations, and to me they are extremely valuable.

President Faxon.—Dr. Truman has given us great encouragement in one remark,—that is, that we are going to know more. I will call upon Dr. Flanagan to favor us.

Dr. A. J. Flanagan.—Mr. President, members, and friends, the president of this Society this morning, when he was disappointed in not having a discussion from the gentlemen who disappointed our Society, and knowing that I had been in the private laboratory of Dr. Kirk for an hour and a half, has taken the liberty of calling upon me. He also made the statement this afternoon that this paper was something by a scientific man and of a scientific nature. Now, as I have sat here this afternoon I said to myself I will get away from the scientific and come down to the status of the everyday dentist. That is, I will speak from the practical stand-point in a very few words. If you will go back in the history of dentistry, you will find that Miller is credited as the discoverer of caries of the teeth, and hence, notwithstanding the fact that many others before him had brought out certain truths along the line of and leading up to the discovery, yet the fact remains that Miller was the man that gave us the one crowning truth. If any of the

gentlemen present have read the various thoughts of Dr. Michaels as presented before the International Congress, let him remember that there was very little information of a practical nature in that article that could be grasped from the stand-point of the English-speaking practitioner; but when Dr. Kirk gave a short paper some-time ago on the work of Dr. Michaels, he brought down to a practical stand-point in a very few words the very fundamental thoughts which we need in dentistry. If I might be permitted I would say that I consider that Dr. Michaels was soaring in space when presenting his paper on saliva study, and that Dr. Kirk has brought the telling essential part of his work down to us where we can see it clearly. The one hour and a half I spent in Dr. Kirk's laboratory enabled me to grasp in a few moments just what Dr. Michaels was laboring for, and I am still greater impressed by the fine work Dr. Kirk has thrown on the screen this afternoon. There is one great fact we can now take home, and that is that there is a condition of normal saliva and another of abnormal saliva. Dr. Kirk has demonstrated this without doubt. Then, when we have in the future a puzzling condition in a patient's mouth, showing an abnormal condition of the saliva, may not this abnormality demonstrated so beautifully by Dr. Kirk this afternoon be the key to the treatment? We hear of many practitioners denying the dentist's ability in the pathological and microscopical laboratory, claiming as the criterion the physicians ability along these lines. Let us look into this. How many physicians make the minute examinations of sputum, urine, etc.? Very few, indeed, for the specimens are passed over to the pathologist and microscopist for examination, and the treatment frequently depends on this specialist's findings. Our calling is coming to that stage where we will have to divide into more specialties, and the time is not far distant when we will turn over to the specialist specimens of saliva, urine, etc., for the scientific treatment of certain dental lesions. Dr. Kirk is certainly to be credited as the man who has gathered many ideas along the line of saliva study, and has shown us this day practical deductions. I say practical, because practical, to me, means logical deductions of the scientific to a useful end.

President Faxon.—When a person makes a remark to a number of people, it is interpreted in different ways according to the person who receives it. As I sat here I saw a person make a movement, and I am going to take advantage of the interpretation and

ask him to speak. I will, therefore, ask Dr. Andrews to say a few words.

Dr. R. R. Andrews, Cambridge, Mass.—I do not understand the subject, although I appreciate and admire what has been shown. If we can, by the examination of the saliva, determine these things, it is going to be of great value. It is possible, Dr. Michaels tells us, to tell by the chemical analysis of the saliva whether a person has decayed teeth or not. If we can by proper nutrition bring about a normal condition of the saliva, we shall have accomplished a great deal. It will be a wonderful help if by the examination of the saliva of the sick we can determine the disease and by this means get at the truth. It seems to me to be a great discovery. I have not studied the subject. I have never made anything but the very simplest analysis of saliva, and I do not feel that I am equal to this occasion. I can admire Dr. Kirk's work, and see in the future great advances from this branch of investigation.

President Faxon.—Now I am going to ask if there is not some one else present who would like to say a few words upon this subject? If there is, we would be very glad to listen to him. The floor is open to any one here. Dr. Stockwell's name has been mentioned.

Dr. Chester T. Stockwell, Springfield, Mass.—I am both glad and sorry to be called upon. I am glad to join with you all in expressions of appreciation and gratitude for what Dr. Kirk has so clearly exhibited and demonstrated here. I am sorry, for I certainly cannot undertake at the present time to discuss the paper. It is for us to think about it, to study the matter, rather than to talk much about it. The subject is almost new to me, but it impresses me as a most important one. And so I heartily agree with Dr. Andrews when he says that we have here opened up to us a field of wonderful interest and promise, and one that is sure to result in great good, not only to the profession but to humanity at large. We can all see at once, I think, that this line of research is bound to be of great service in diagnosis, and no less so in the realm of prophylaxis.

There is another reason why I am especially glad for this paper. It indicates a new scientific era in the world of dentistry and a return from what has for some time seemed to me a too exclusive devotion to the purely mechanical or art side of our

profession. This is important, it is true, but we are to depend, I think, upon the development of the scientific aspect of dentistry if we are to maintain the claim of being a profession rather than a class of artisans. In this connection, therefore, I have a suggestion to offer. Let all our district societies take up this matter and focus upon it and around it their fall and winter's work. In this way we may best conserve our own interests, and likewise best manifest our appreciation of Dr. Kirk's magnificent pioneer work. We may follow safely where he so well leads.

Adjourned till 6.30 P.M.

Presidential Address

Evening Session.

At 6.30 o'clock a banquet was enjoyed by one hundred and fifty members and friends of the Society. After this was disposed of the president addressed the members as follows:

President Faxon.—The subject selected for this evening's meeting seems a big one for an after-dinner topic, but it is considered an advantage to make our banquets educational and instructive by calling together some of the best men at times to discuss different subjects, different matters of general interest, as well as to make them a pleasure by the presence of the ladies and good music. Last year "Dental Education" was ably discussed, and I am certain that those present were well informed in regard to the advance that is being made in that direction, and next in line of importance to us is dental legislation. It is wisely said that we have laws enough now, both good and bad; let us be careful not to add to the bad ones. It is also said that all legislation to-day prescribing and controlling the qualifications and standard of dentistry has been effected through the influence of the State societies. The committee in choosing the first speaker of the evening have shown good judgment in choosing one who has appeared before the State Legislature of Massachusetts in behalf of the State Dental Society and in the interests of dentists generally throughout the State. It is with feelings of great pride that I ask you to listen to the Hon. James A. McGeough, of Boston.

MR. PRESIDENT, LADIES, AND GENTLEMEN,—Some of us here to-night I know are not members of the profession or of this honored Society, but from the way in which we all seem to have enjoyed this bounteous feast just now before us, I think I may fairly claim that we are all pretty good dentists in a way, and those

of us not members are, for the time being, at least, closely affiliated with the Society,—a kind of honorary members as it were,—and therefore, Mr. President, to be sociable, may I not be permitted to include all and say, Ladies and Gentlemen of the Massachusetts Dental Society.

As our president was closing his remarks just now, and I realized that he was about to call my name, I began to feel very much like the man who had prepared his speeches very carefully in advance, but when the time came for delivery had almost forgotten the words. However, the kind introduction on the part of our president and the very generous applause accorded me at the outset give me assurance that I am in the house of my friends, and that in filling out my allotted part of this interesting programme the blunders and shortcomings I may be guilty of will all be kindly overlooked or forgiven.

At these annual meetings of the Society I understand that, aside from the social features, it is the custom to introduce some subject for discussion that may tend to an advancement of the science and the good of the profession, and on this occasion it is, as announced, "The Law in Relation to the Practice of Dentistry."

During the past few years this subject has engaged the attention of the courts from time to time and has become a matter of considerable importance not only to those seeking admission to the profession, but to those already in, as well as to the public at large. It is also important because there seems to be some difference of opinion as to the form and fairness of the existing law, and I have been requested to say something about this subject, because it is a subject about which I suppose I am presumed to know. I appreciate the honor, and, without intending to trespass on your patience long, I trust I may be able to render a little assistance in solving some of the difficulties and questions involved.

Now, I am not going to tell you what I know about dentistry, although it would not take me long; nor am I going to tell you what I do not know about dentistry, because, while that might be very interesting in many respects, it would necessitate a waste of altogether too much time, and therefore I hope to be excused if I studiously avoid that interesting subject altogether except in a very general way. Fortunately for me, however, it is not necessary to be much of a dentist in order to be able to talk about the

law; and law of any kind is, I also beg leave to say, rather a serious subject for a festive occasion, and if I become tiresome I pray your indulgence. I must endeavor, of course, to keep close to the subject announced for the evening.

In the first place, law is not a thing to be desired for itself exactly. Law always implies a restriction of liberty. It denotes the existence or possibility of some public wrong. It is generally associated in the mind with fines, penalties, and imprisonment, and some may naturally ask the question, Why should there be any law in relation to the practice of dentistry? What is the reason for it? Where is the necessity?

This is an important question. It lies at the foundation of every law. A correct knowledge of the origin, the necessity, and purpose of a law goes far to a proper construction and a better understanding of the law itself, and therefore, instead of a tiresome recital of the many controversies and mooted questions that have arisen from time to time in and out of court, I think it better and more satisfactory if we give this particular phase of the subject a somewhat extended consideration: Why should there be any law in relation to the practice of dentistry?

Briefly stated, the answer to this question is found in the present prosperous condition of the profession, the large and increasing number of practitioners, and in the nature and growing popularity of the science itself as affecting the public at large; and to this latter consideration more particularly I wish to call attention.

Dentists or no dentists, we all know enough to know that it is a good thing to have good teeth, especially on occasions like this, for instance; and in order to have good teeth we must preserve them; and we all know enough to know that when by accident or decay we unfortunately lose our teeth, it is of the highest importance that we have their places filled by the very best substitutes which the skill and ingenuity of the profession can supply.

Doctors tell us, and I am not so sure but what it is now a matter of very general, if not universal, knowledge, that the physical well-being and good health of the body depend largely upon the care and preservation of the teeth. I have no doubt that neglected old roots and decayed teeth are often responsible in a great measure for many of the other ills that flesh is heir to. So that in many ways and for various reasons we know it is a good thing to have good teeth. Good teeth are essential to a pleasant and a clear

articulation. We do not speak or sing with our teeth exactly, but what kind of a speech could a Daniel Webster make, and what kind of a song could even a Patti or a Calve sing, without their teeth?

Then there is the æsthetic side of the question, which ought not to be overlooked. Every man should look his best. I fear we men are apt to be a little careless in this respect, but the ladies have no excuse. Somebody has very properly said that it is the duty of ever woman to make herself as beautiful and as attractive as she can, and how can man or woman be attractive without a fairly good set of teeth? Imagine the face of some fair and radiant maiden, with an outline of feature perfect as a Raphael's Madonna; a shock of golden hair, or such as a Titian might envy; a brow white and as smooth as steel; a pair of Vicking blue eyes that flash and shine like buttons on an angel's garment, metaphorically speaking; "the least little delicate aquiline curve in a sensitive nose," said to be a great charm of feature; cheeks aglow with health and beauty, and lips chiselled to perfection and wreathed in happy smiles,—imagine all this, and yet I think it will be at once agreed, without a good set of fairly perfect teeth the picture is incomplete. From every point of view we know it is a good thing to have good teeth.

Besides, dentistry has come to be an attractive and a learned profession. We are told that "the proper study of mankind is man," and while dentistry is more particularly confined to a fraction of the human anatomy, it is none the less interesting and important, and a man only needs to feel the sting of an aching dental nerve for a minute to realize "how fearfully and wonderfully we are made." Formerly no doubt the fear predominated, but the wonder remains. And when you come to think of it, how much of the mystery and wonder of all creation is found in a little tooth! the marvellous origin and growth; the admirable construction and adaptation of parts; the perfection of design; the entire fitness for the end intended; its life, its development, decay, and death, following out and exemplifying in its little round of existence that great and incomprehensible law to which all created material things are subject,—the unchanged and unchanging law of nature, a thorough and practical knowledge of which in its operations and external effect is so essential to the scientific care and preservation of the teeth. From this it will be seen at once that in dentistry, as in all other branches of the medical profession proper, a sound

and liberal education is required. Manual dexterity is of course necessary. But a thorough study and practical knowledge of the structure and pathology of the teeth and adjacent parts, the causes of disease and decay, are also essential to the qualifications of a good dentist; and I have no doubt it is this very scientific and studious research in recent years that has helped to elevate the profession to its present high plane of perfection, respectability, and usefulness.

Why should there be any law in relation to the practice of dentistry? A glance at the history of the profession—what it is and what it has been—will help to explain. The contrast is interesting and instructive.

Formerly, and not so very long ago either, the practice of dentistry was anything but attractive. If dentistry was known and practised among the ancient Egyptians in any degree of perfection, as is claimed by some, it certainly became one of the lost arts. As now practised, I understand dentistry is of a very modern date,—fifty years ago; and perhaps some of the older members of the profession to-day may fairly claim to have been at its birth. Prior to that time and for the centuries before, there was little need of any law for the regulation of the practice of dentistry, although they do tell some harrowing tales of the practice in those early days.

If the doctors ever performed any dental operation at all, it was only in case of dire necessity, and the less they had of the business no doubt the better they liked it. In those olden times the practice consisted chiefly in the extracting of fractious and troublesome teeth, and we are told it was main strength on the one side and heroic endurance on the other, as the operation was performed with instruments something like a blacksmith's forceps and a cold chisel. In those happy days it must have been easy for a dentist to collect his bills, for after being dragged about the floor and generally used up, as the stories have it, the patient must have considered that the operator had earned his fee. But sometimes, it is said, things took a different turn. When the suffering patient happened to be a big man with a bad toothache and a worse temper, the operation sometimes assumed the character and proportions of an incipient prize-fight, and as between patient and practitioner it was often a question as to which was the better man.

I am reminded here of the man who came to his work one morning with a black eye and many bruises about his face, and looking generally used up. Seeing his condition, his employer inquired, "Why, Patrick, what happened?" "Oh," said Patrick, in rather an apologetic way, "I was at a wedding last night." "At a wedding?" said his employer; "but how did this happen?" "Well," said Patrick, "it was this way: You see, there were a lot of fine people there putting on a lot of airs, and among them there was one man in particular, with a great deal of white linen and a swallow-tail coat, a-swalling around, and I said to him, said I, 'And who might you be?' and he said to me, 'I'm the best man.' And, begorra, he was."

In those prehistoric days of the profession there was little or no competition. A dentist's office was hard to find. A suffering patient had no difficulty in making a date if he found his dentist; at least there was no crowding or waiting for turns in those days, and seldom, if ever, was there any occasion to invoke the law. Now all this is changed. Dentistry to-day is in comparison a pleasure and a pastime. A dental office is no longer a place of torture, but a "parlor" of luxury and ease, and the throng of patients from day to day attest the popularity and success of the profession. The reason of all this is obvious. We may read it in the signs of the times. Daily from my office window, in great luminous letters of heroic size, so that all who run may read, and a long way off too, if necessary, I am compelled to notice these fascinating specimens: "Big Dental Office," "Teeth extracted without Pain," "Lowest Prices in Boston for Artificial Teeth and all Dental Work," with attractive pictures of the work and specimens of the teeth extracted. What the size of the office has to do with the practice in these days, I don't know. It may be to accommodate the waiting and anxious public. Then, as a part of this same sign, in smaller, but still attractive, letters, I read, "Examinations free," "Bridge-work, \$5.00," "Gold crown, \$5.00," "Headquarters for artificial teeth, full set, \$5.00." On a building front in the next block there used to be a sign, "Full set, \$2.50," but that has been recently taken down. I suppose the lucky dentist got rich and retired. But the most interesting of all these alluring signs is this, in small confidential type: "Dr. ———, the *real* painless Dentist." It is so comforting to know that while you are being painlessly operated on, the operator himself is also free from pain.

These, I understand, are but samples of what we now find in many parts of the city of Boston and in every other city and town of importance throughout the country. Even in the street-cars these dental signs now occasionally greet us, and regularly in the daily papers they may be seen in gay and festive columns with "Red Fox Ale," "Divorces procured on the instalment plan," "Clothing on credit; no money down," "Consumption treated, no cure no pay," and cheerful announcements of that kind, with others too numerous and some too unedifying to mention. But I am not discussing the propriety or impropriety of public advertising. I am simply stating some familiar facts, to show the wide-spread and growing popularity of the science itself as affecting the rights and interests of the people.

Then again, dentistry as practised to-day, with all its improved and painless methods, is not free from danger. Grave and serious operations come at times to the dentist's office, and even in minor operations, with the use of anæsthetics, death in the dental chair is not unknown to the profession.

From this condition of things which I have thus endeavored to outline, the reason and necessity for a law regulating the practice of dentistry must be apparent. But to be a little more explicit, it is important to observe in this connection that all good law is and must be for the benefit of the many, not the few. It is a mistake to suppose, as we sometimes hear, that law is for the benefit of any particular number or class of persons. There should be no favoritism under the law. "The greatest good of the greatest number" is the object in view. Incidentally, the individual may and often does reap some benefit or reward, while, on the other hand, some may suffer more or less privation, but the true and only legitimate purpose and object of all law is the welfare and protection of the public. *Salus populi suprema est lex.* This is the test. If it meets this requirement without imposing any unreasonable hardship anywhere, it is a good law, and that this is the true rule a moment's reflection will show.

In primitive society and isolated settlements there is little need of any law. Robinson Crusoe and his man Friday on their lonely island didn't need any law, and in a small Christian community like Acadia, for instance, about which our own Longfellow so beautifully wrote, the ten commandments no doubt would be sufficient. But in the great cities and centres of population an alto-

gether different condition of things exists. The people outside of little circles, more or less extended, although forming the same general community, are practically strangers and unknown to each other, to say nothing of the great floating population in every large city who can have little or no acquaintance of place or people, and yet all these are entitled to and need the protection of the law. Then the difficulties and necessities of life in these days are increased a thousand-fold. The competition in business and trades of all kinds has become very great. There never seems to be money enough to go round, and in the race of life, or rather in the struggle for very existence, the great majority are constantly in danger of being borne to the ground in every direction, and hence the necessity for more specific laws and regulations for their protection and relief.

Now, this rivalry, competition, and strife we find not only in all trades and branches of business, but in the professions as well, and dentistry is no exception to the rule. Incited by the growing commercialism of the times, and attracted by the opportunities which this comparatively new field for money-making affords, it is not to be wondered at if many seek the profession for the money there is in it, while some of those already in, not members of this Society of course, are tempted, I fear, to adopt methods and practices in which the good of the public or honor of the profession has little to do. Accordingly, in Massachusetts, and I understand in most of the States of the Union, there are laws for the regulation of the practice of dentistry.

When you have some plumbing to be done at your house, you want to be assured that the health of your family is not endangered by the faulty construction of an incompetent workman. If you have a prescription to be filled, you want to feel that you may enter any drug-store and have it filled without the fear of being poisoned by the wrong medicine. If a lawyer is to be employed, it is important that he should be a member of the bar. If a doctor or a dentist is wanted, it is only fair to the public that the individual called upon is competent to perform the services required. This is the object of the law, and this the law endeavors to secure.

Now, in the practice of dentistry, as in the practice of any other profession, trade, or calling in which the safety of the public is concerned, there are two ways, and, when you think of it, only

two ways, in which the rights and interests of the public are or can be reasonably cared for: First, by admitting to practice those only who are qualified, and secondly, by holding those who are admitted to an exercise of professional skill, due care, and diligence, and to meet these requirements we have two kinds of law,—the statute or written law, and what we call the common or unwritten law.

Let me speak of this second kind of law first, because it is the earlier of the two and in a practical sense perhaps of less importance. I trust I will not offend the strong New England Americanism of any one present when I say that this common law we get not from any legislation of our own, State or national, but we get it, as we get our language, from what may be very properly called in a limited sense the mother-country,—England. It came over in the “Mayflower.” It was the guide of the thirteen original Colonies before the Revolution, and to-day it is that great body of jurisprudence, modified and changed by statute more or less to suit the varying conditions of time and place, but still the great body of jurisprudence under which we live. Broad and comprehensive in its scope, it governs and regulates the people in all their rights, duties, and obligations among and to each other,—that of master and servant, employer and employed, doctor and patient, lawyer and client. It includes all those fundamental rules and principles of right and justice recognized in and binding upon all our courts, civil and criminal, and it has been adopted by every State in the Union, except Louisiana alone; and this law we get from England.

Under the provisions of this law every practitioner is bound to a reasonable degree of professional skill and the exercise of due care and diligence, and if by reason of any lack of this professional skill or diligence a patient sustains an injury at his hands, he thereby becomes liable to a suit for damages under the common law.

Of course, politics are not in order here, but I presume patriotism always is, and after this acknowledgment as to the source of our common law I want to say a word by way of explanation and as a kind of set-off, if you will pardon the digression. It has become fashionable in certain quarters of late, especially since the Spanish War and now that the coronation of his Majesty King Edward VII. is at hand, to affect an unusual friendship for the mother-country; and if it be only mutual and sincere I hope that

this friendship may never grow less; but because we have taken our language and our common law from England, it does not follow, by any means, that we owe everything we have to England, and it does not follow that we must therefore ape England's antiquated customs, or that we are in any way dissatisfied with our own; and in this connection I am tempted to tell you another story I heard not long ago.

A gentleman travelling in this country and walking down Broadway one evening in the city of New York, feeling a little lonesome and inclined to be sociable, stopped a man to ask for a light, and, being accommodated, remarked, "This New York is quite a town. Came near getting lost several times to-day. A man doesn't seem to count for much here. Now, in London, don't you know, I was something. My name is Sir George Rawlins, Knight of the Garter, Knight of the Bath, Knight of the Golden Fleece, Knight of the——" and he went on to recite his many titles; and having finished the list he said, "And now, my man, pray what is your name?" "Oh, my name," said the man, who it seems was also a stranger in the country, and recently from the Emerald Isle, "my name is Michael Murphy, last night, the night before, the night before that, to-night, to-morrow night, and every night, just Michael Murphy."

But to return to our subject. The practitioner who through a want of professional skill or due care injures a patient is liable therefor under the common law in a suit for damages. This is now the law, always has been the law in Massachusetts, and, I venture to add, always will be, because founded on the unalterable decrees and principles of justice. But upon reflection, it will be easily seen that this did not meet the entire difficulty. A right of action was all very well, but few cared to adopt the remedy. The expense of litigation, the proverbial law's delay, the desire to avoid publicity, and very often the unaccountable indifference of individuals, especially in large communities, as to their own rights left the people an easy prey to every advertising, unscrupulous mountebank who might choose to enter and disgrace the profession. Anybody and everybody, with or without a college training or certificate of qualification, had a right to practise. Every college and dental school throughout the country, reputable and disreputable, had its own standard of qualification, or want of standard, and as to who were competent or incompetent the indiscriminating public

had no means of knowing. Hence, the reason and necessity for further legislation. And to meet this condition of things the statute of 1887 was passed by our Legislature. This statute, with a few subsequent amendments, is now embodied in Chapter 76, Sections 24 to 29 inclusive, of the Revised Laws, which came into effect January 1, and have been lately published. With the provisions of this law the Society and members of the profession are of course familiar, and it needs no defence.

Every law to be just must be impartial, reasonable in its requirements, and for the good of the public; and this fairly describes our Massachusetts Dental Law. The controlling feature is that only those who show themselves to be duly qualified by a satisfactory examination before the State Board of Registration shall be permitted to practise. All else is detail.

The advantages of this law must be apparent. Chiefly, it establishes a central board of examiners who are appointed by the governor and directly responsible to the State; it fixes a high and a uniform standard of qualification throughout the State which no other system can provide, and if properly and judiciously enforced it secures to the public that reasonable measure of protection which it is the duty of the Commonwealth to furnish. Besides, the moral effect of such a law is not without its influence. It maintains the high standard of the profession and inspires the confidence of the public. The honest practitioner gives it his hearty approval and support. The laggard and the charlatan alone complain.

There is one other point to which I wish to call attention, and I have done. The vindication of every good law lies in its prosecution. Useless and in vain is that law which may be violated with impunity. A law that becomes a dead letter is worse than no law at all. Every law to be effective must be enforced. These are acknowledged truisms. Now, under the common law, as we have seen, those only who suffer injury are entitled to sue for damages, so that the prosecution of the common law in this particular must be left to them. Prosecutions under this statute law belong on the criminal side of the court and principally devolve upon the State. The Board of Registration, among other things, is charged with the important duty of regular examinations and the issuing of certificates to successful applicants, but as to who shall undertake the duty of prosecuting violations of the law the

statute itself is silent, and accordingly this duty rests chiefly with the regular police authorities. Of course, the board cannot be indifferent to open and flagrant violations of the law, and in my opinion it is entirely competent for them, as a board or as individuals, to furnish the police authorities with such facts and evidence as may come to their knowledge. But this criminal prosecution is at best an unpleasant duty, and as the law makes no provision for the necessary expense and loss of time this work involves, farther than as I have indicated the board can scarcely be expected to go.

It is also entirely proper and competent, in my opinion, for this Society, as a whole or by its duly appointed committees in the various cities and towns, to take such action and give such assistance to the local police in this respect as the Society may from time to time think best and determine.

But after all is said and done under the law, much must be left to the individual conscience, the good influence of this Society, and public opinion. The charlatan who contrives to get into the fold and the reckless practitioner, however incompetent, who only thinks of the money there is in it, and just escapes the law, must eventually find their proper level and be relegated to that limbo of unenviable practice and standing in the community which their effrontery and their conduct so richly deserve.

Money is not all there is to live for. Good name in every honorable profession at least should count for something, and in this connection I would recommend for the serious consideration of the Society an amendment to the present statute law, to the effect that the conviction of any practitioner of a felony or lesser crime involving the breach of any professional trust or serious malpractice shall operate as a cancellation of his certificate and a bar to future practice. The profession can ill afford to lower or permit to be lowered that degree of professional skill, conscientious service, and high moral standing which the good name and honor of the profession itself require and the general public, upon which it depends, have a right to demand.

And now, Mr. President, after taking much more of your time than I at first intended, and let me again say appreciating the honor conferred upon me, I respectfully submit these remarks and few suggestions of mine for your candid and unreserved criticism and consideration, hoping that they may prove to be of some ser-

vice to the Society and through the Society to the profession and community at large. And ladies and gentlemen of the Massachusetts Dental Society, I thank you for your patience and attention.

(To be continued.)

HARVARD ODONTOLOGICAL SOCIETY.

President Werner.—Upon entering upon our twenty-fifth year as a Society it is perhaps well for a few moments to reflect how we were and how we are now. Beginning with five members, holding our first meeting on July 2, you see we have changed our birthday; we were really born in July, right after commencement day, after the ending of the school term. when there was a desire among those five members to come together and organize something which they had been, while at school, working among themselves as students. We have arrived now at our vigorous manhood of twenty-five years, with eighty-four, and over, active members.

It is well to remember that we confine our membership to graduates of the Harvard Dental School, and that is the first step in that direction of any dental society that we are aware of, outside of an alumni organization, a dental society which would meet monthly and confine itself to graduates of a certain school.

Then a very vigorous but cautious step we took when we adopted in our constitution and by-laws the requirement that each member should in his turn read a paper. That, in those years more than to-day, was a very decided step to take. It was the one thing that prevented our becoming a larger society in the early years. Men were afraid to belong to a society where they had to read a paper.

Then another unique thing that we adopted early, one of the first dental societies in the country, and certainly the first one in New England, and that is to meet in a hotel, at a banquet, at a dinner. Previous to that dentists used to meet in hired halls, hungry and tired, coming directly from their laboratories and from their chairs. They used to get angry, and quarrel and fight a good deal more than we do now. We found that a banquet, that the dinner-table, was a congenial and agreeable thing to all. So we were the first dental society to meet regularly at a banquet and have the meeting at a hotel.

We were the first dental society in New England that had a stenographer that took a minute report of everything said. That was quite a step.

It is well to consider these little marks in our foot-path during twenty-five years, and see what it has gradually led up to. We feel that no man should join this Society who is not willing to read a paper, and if he will not read a paper, the only thing for him to do is to get out, or never come in.

There has been a hinting in some directions already of limiting our members. Whether that is wise or not remains to be determined. When we began we certainly did not think of limiting members more than to graduates of the Harvard Dental School, and I have yet to see a reason why we should now limit them to any special number. I do not think our Harvard Dental School is going to limit its graduates. I do not think any department of the University is ever going to limit its graduates. I hope we shall never limit our membership. We want every good graduate of the Harvard Dental School to be a member of this Society; and when we have outgrown the quarters that this good hospitable hotel sometimes puts us into, a little room adjoining this that you are all so familiar with,—when we have outgrown that, we must come to a larger one like this; and when we have outgrown this, there are still some larger rooms. There is the Harvard Union, a club for Harvard men. You know about it: some of you are members, and some have been there, and some may not have been there. It is a very congenial place to go to. There is an atmosphere about it there that is nice. It seems that the time is coming when in that club every Harvard Society should meet and find accommodations. I would like very much if the Executive Committee would consider that and would take us over there once, for an experiment, at least. We could save money, if that is an object. We would have a good comfortable room. Perhaps we would not have all the privileges of the club, because we are not all members, but we could have certain privileges; that could be arranged for.

I think we can honestly look forward to our twenty-fifth year as perhaps the best in our existence as yet. There is one other thing that I have been thinking of, and that is that we ought to have a committee of wide-awake young members to do something in the direction of original investigation. It would be taking a

step that no other dental society, perhaps, has taken. Many of you younger men have been very faithful in attendance; you have been very patient listeners, some very mute, not having uttered a word. You all have shown good appetites. Some of you cannot be so very busy in your first years and could give some time to original investigation. I think our Society loses that element, and I should like to see a committee organized regularly every year who would stand for original investigation, and would make a report—a verbal or a written report—at every meeting of everything that is new in our whole dental literature. Some of us, perhaps many of us, do not read all the dental journals. Some of the younger men certainly have time, and read more than some of the older men. If they could condense all the practical points and report them at each meeting, it would give us a vast amount of material to think of and to discuss.

There is no absolute necessity of our adjourning at half-past eight or half-past nine. I remember the days when we used to adjourn at eleven and after. Our papers are short. We are not in a hurry; we are not hungry; let us come here and make the most of it. So I think that a committee of the kind I have mentioned, who would take original work and report on interesting things found in literature, or on practical points, would be a great addition to our written essays.

Without making further remarks, we all shall be glad to hear from Evan P. Wentworth, D.M.D., on “Winning the Confidence of Children.” How essential it is to win the confidence of children no one will question who has been in practice. Many years ago on the Mediterranean there was born a man who stated some remarkable things about the simplicity of children,—that in order to get to the Kingdom you have to be born again and have to become as a little child. I think we could almost say that in order to succeed as dentists we have to be a lover of, and thereby win the confidence of, children. We shall be very glad to hear from Dr. Wentworth.

(For Dr. Wentworth's paper, see page 91.)

DISCUSSION.

President Werner.—The subject is open for your consideration.

Dr. Stanley.—I have been very much interested in this paper. I think the subject is one of very great importance to every dentist, —winning the confidence of children. In order to do what is neces-

sary to be done for the child you must first get the confidence of that child. Any way that that can be gained should be resorted to. I have always tried in my practice to get that confidence to start with. A patient comes to me once in a while where the pulp has to be destroyed in deciduous teeth. Never after an operation of that kind have I been able to have the absolute confidence of the patient.

The first operation should be a very short one, doing scarcely anything at all, but getting the attention on this or the other thing, anything to leave a pleasant impression on their minds the first time they visit your office.

I have in mind a family of three children, and they all had very poor teeth. One little fellow was one of those boys who will endure a good deal more than they will show: he was a plucky little chap. I think I had to commence on him when he was about three and one-half years old. He had a small mouth, and I had to fill all his back teeth, and it was no fun, either. I worked him along as carefully as I could. I soon had the confidence of those children, and now it stands me in good stead. They come right along and have their teeth attended to.

President Werner.—Many good thoughts must come out. I cannot help thinking of one. A few weeks ago a father informed me that Philip, a boy whose four lower incisors I had regulated in two months' time to quite a normal condition, had kept a little memorandum account of how many times I was pleasant and how many times I was cross. They are very cute observers. I have not found out how the balance stands. I intend to secure his confidence, as I have it now pretty thoroughly.

Dr. Cooke.—I was just wondering, while sitting here, how many of you gentlemen have children of your own. Certainly one of the best ways to gain the confidence of children is to practise it at home. And I have noticed, as a rule, that if a child does not behave in my office I have good reason to judge that it does not behave at home; and if it will not mind me and I cannot do anything with it, I come to the conclusion that its mother does not have any control over it.

One boy came in, and when I commenced to do anything for him he would yell. I said, "That is all right; you shout as loudly as you please." It was summer time and the windows were open, and he went at it, and I had to call him down. I said, "We will

try a new tack." I sized him up, and I knew his aunt would stand by me. I said, "There are two ways to fill your teeth. They have got to be filled. There is an easy way and a hard way. There is the easy way; I will do it easily and gently; but if you shout, I am going right at it, and I shall not care where this instrument goes, but I am going right along with it." He said he could not keep still. I said, "You have got to. Now I am going to begin, and the minute you make a single bit of noise I shall cut in as hard as I please." I had the victory, and he never made a particle of noise.

I remember but one child that I was not able to work for: that was a boy four or five years of age, whom no one had ever been able to control. The parents would start for the opera, and he would shriek from the time they left until they got home. I never could do anything with him. He has always been on my mind, and I regretted my inability to conquer him. He has now grown up, and I have him again as a patient. He is not really a saint yet.

Dr. Riley.—I am afraid I cannot say much. I did not hear the paper, Mr. President, so I am hardly able to talk to the subject at all. But to relate experiences, I cannot have been many years in practice without having many experiences like Dr. Cooke's. One, that I think would tell the whole story, was a boy with much the record of Dr. Cooke's worst boy. He could not be got into the office. He was finally induced to enter the building by means of a ruse, and I was able to coax him into the chair. I remember, among many cavities that he had were two labial cavities in the centrals. The boy was eleven or twelve years of age. You can see the teeth were extremely neglected. I promised not to hurt him, and I had to keep that promise, but I did absolutely nothing the first day but to warm some gutta-percha and stick it in. The next day he came of his own volition, and I filled those two cavities properly, and five on the lower incisors. I won the boy's confidence, and he was a little man after that. I imagine he had been frightened.

Dr. Cooke.—I would like to ask Dr. Riley if he hypnotized the patient, or if he hypnotized the gutta-percha, so it would stay in a wet cavity.

Dr. Riley.—I dried the cavity partially.

Dr. Cooke.—I remember Dr. Riley was on record several years

ago as placing gutta-percha in cavities that were not perfectly dry, and making it stay there. I never made gutta-percha stay where there was moisture.

Dr. Naylor.—It may be interesting for Dr. Cooke to attend one of Dr. Potter's lectures, where he makes gutta-percha stay on a glass filled with water.

Dr. Cleveland.—I only inject a remark. Dr. Meriam used to perform that experiment twenty years ago. He used to cover the surface with ether and resin and make it adhere to the inside of a tumbler filled with water. I have done it oftentimes, putting in temporary stoppings of gutta-percha and making it adhere to a moist cavity. I think if Dr. Cooke will try it some time he would succeed very readily.

Dr. Wilson.—Mr. President, naturally a man who has been in practice as long as I have has had experiences. I remember once a lady bringing in a little boy who needed some work done. The boy absolutely refused to open his mouth. He refused to stay in the chair. The mother asked me to force him to stay in the chair, and I rather objected; I did not like the idea of forcing the child. However, I did so. By the way, while I was carrying the child to the chair, somewhat forcibly, another patient saw me do it, and she said it was a horrid thing to do. If my memory serves me rightly, she went away and I never saw her again. I got the boy into the chair, and he was not one of the manly kind at all; he was simply stolid and ugly, and he would not open his mouth. Finally I had to force it open. Never, under any circumstances can you gain the confidence of a patient by so doing.

Dr. Vaughan.—I have tried a little different method. I have used bribery in a good many cases. I plan to have my children all come on Saturday and get it over with, and almost any Saturday I have two or three of them, and usually on that day you will see three or four children tagging me down to the drug-store for a soda, which I have promised if the patient will be good. I find it works quite nicely.

Dr. Smith.—Mr. Chairman, I think Dr. Wentworth has been very interesting. I was impressed with the gentleness which he outlined, and I also was doubly impressed with the gentleness of Dr. Cooke. His gentleness was of the strenuous kind.

I think one does not always fail because he has not children of his own, but you can adapt yourself to children's ways. If he

has not children, he can love other men's children; and while I have no children of my own, I am very fond of children; I am interested in children; I am interested in what they do, and that goes a great way in mastering them.

Of course, children are made up of different temperaments, and you have got to meet the different temperaments the same as in grown-up people. There are times when you have to be very severe. In the majority of cases it is wise to be very gentle.

I was impressed with Dr. Wilson's relation of the case where he forced the child into the chair, and if I understood him correctly, he said he never won the confidence of that child, and that one would not be able to win the confidence of a child under such circumstances. I have had just the reverse experience in that kind of a case. The patient, a young lady now, is still a patient of mine. As a little girl, one of quite a large family of children, she ran the house, so to speak. She was brought to me, and she would not get into the chair. I had the nurse put the patient in the chair. After I got the child into the chair, I had to force her mouth open. I did so. I told her, to begin with, that I was not going to hurt her; that if I hurt her, if she would raise her hand I would stop instantly, trying to impress her with the fact that this operation was under her control. And I also use this term with children: I never speak of "cutting" a tooth, but I always use the term "scratching" a tooth. There is something about the word "cutting" with a child that I suppose causes blood to appear to them at once. It was an unfair battle, but of course it was necessary that she yield. I did not fill a tooth for her that day. She knew she was not hurt. She came after that, and I won her confidence, and it was not a great while until, when she came to her appointment, she would bring me flowers. She has remained a loyal patient ever since.

Dr. Moffatt.—There is one characteristic that has not been mentioned, and that is appealing to their pride, particularly in the case of boys. I had a patient about seven years old, who came with his mother. He had been once before and had got along very well, and I did not anticipate any trouble. But suddenly he began to cry and would not open his mouth. I stepped down and said I was not accustomed to working for that kind of a boy; that all my boys were good boys. I was sorry he did not have any more pride about it, but if he would come back again, I would be glad

to have him. I kept on with what I had taken up, and in a few moments he came back. I appeared to be surprised to see him, but welcomed him. I had appealed to his pride.

President Werner.—All these that are brought out are good points, all gently hinting at what I wish to bring out, and that is truthfulness. You all know how essential it is, you who have had the experience, not to lie to a child; certainly not the first time. To-day I had a mother whose little boy had a left superior lateral extracted two days before, and she said, when she came in to-day, "Doctor, Roger thinks you are a very nice man." I said, "I am very glad." "You know last summer he had the tooth on the right side taken out up in the country, and the dentist told him he was not going to hurt him at all, just going to look at it; and then he concealed an instrument in his hand, and hurt him in pulling it. You did not tell him that, and he thinks you are a pretty nice man." One ought not to tell a child you will not hurt him, and then do it.

Dr. Whitehead.—There is one point that I thought of in regard to the stoical behavior of some children. I had one little patient who was very stoical. He was really a brave little fellow, and he would not give any sign of being tired or feeling any discomfort in the work that was being done for him. I think in such cases, in order to keep the confidence of such children, it is necessary to take that factor into consideration, and realize that we may sometimes keep a child too long, when he is really brave and able to bear it without signs of distress.

Dr. Stoddard.—I cannot really pose as a George Washington and say that I have never deceived any children in dental operations, but it has been my effort as much as possible to tell them the truth when I have had occasion to work for them. And when I have had occasion to take out any teeth for them I generally have told them I would give them ample warning when I was going to do it; I would not take them unawares and take out the tooth without their knowing it.

I question whether it is really our place to discipline other people's children; it is the parent's place to do that, and if the parents are not forceful enough to manage the child, I question whether it is our place as dentists to force the child to undergo a dental operation.

I believe in using kindness and fair dealing with children as

much as possible, and try to persuade the child by all honorable means to have the operation performed, and not try to do too much at a time. I think very frequently as dentists we attempt too much at one time. You had better give a child a short sitting and put in one filling than to disgust him entirely with a number of fillings at one operation.

Dr. Wilson.—I have just happened to think of a case of a married woman whom I had as a patient at one time, who was an invalid for a number of years, and she owes all her ills and infirmities of the present time to her being forced to open her mouth in the dental chair and undergo a dental operation. She has a horror of this experience. She was forced into the chair and given ether.

Dr. Smith.—The case Dr. Wilson cites was a case, undoubtedly, where the patient was absolutely afraid; and I say to force a patient of that temperament to an operation would result seriously. It is the opposite case, where it is pure ugliness; forcing those people does not give them any trouble. It is a good thing for them.

Dr. Clapp.—I think this is a good time to remind you all of a little thing which you have probably forgotten, and that is that almost every temporary tooth that has to be extracted can be extracted without pain to the patient very easily, simply by the rapid-breathing process. I never had anything that has given so much comfort to little patients, where it is necessary to extract teeth, as this rapid breathing. I tell the child that if it will do just as I tell it, I will take out the tooth without hurting; and then I will show the child how to breathe. I tell them, "I want you to breathe rapidly and take good long breaths for half a minute, and then we will have the tooth out and you won't know anything about it." I tell them to take long breaths, breathing in and out easily and readily. After they have taken a dozen breaths like that, you can take out any temporary tooth and the child will not know it. I have even had to shake little patients to wake them up.

Dr. Cooke.—Have you ever had any bad results from the use of the rapid breathing?

Dr. Clapp.—No.

Dr. Cooke.—Do you ever try it in the excavation of sensitive cavities?

Dr. Clapp.—No; not to any great extent.

Dr. Cooke.—I have tried it with certain patients where the

teeth were very sensitive,—grown up patients,—and there is no question but that it will help. Whether it is entirely the anæsthetic effect, or partly the taking the mind off the subject in hand and putting it on to the breathing, I do not know; but it does the work, I had a patient the other day that tried it, and she began to feel a tendency to faintness.

President Werner.—Are there any other remarks on this subject? If not, we will pass to our next, which is, “Crowns instead of Extensive Restoration with Gold.” The discussion is to be opened, I think, by Dr. Clapp.

Dr. Clapp.—Some two months ago, I think it was, you will all remember that our president gave us a description of a very extensive restoration by means of filling. The time was late, or there were other things on the programme which required the time, and his case received no discussion. I said to one of the Executive Committee that it appeared to me that if that case should go without discussion it would leave the impression, particularly on the younger members of the Society, that these large restorations by means of filling with gold were usual and countenanced and recommended by the other members of the Society.

Now, I want it distinctly understood that in what I have to say I have no criticism, no adverse criticism, on this case that the president reported. But it does seem to me that the date of large restorations of gold filling have almost entirely passed. If I understood the report of that case properly, it was said that the patient believed that no crown could have been put on to his own teeth and have it clean and wholesome and durable. He had had one on and it had proved very unsatisfactory as regards wholesomeness and cleanliness. It looks to me just like this, that the gentleman who was ingenious enough to put a rubber dam on to that case and make a gold filling was ingenious enough to place a crown on to that tooth that would have been as perfect as a filling, and been neat and wholesome, with very much less discomfort to the patient and with as good, if not a better, chance of a successful operation as he had to making a successful operation by the means of the extensive gold filling.

As I said before, I think that the days of these very large gold filling restorations have passed. I do not wish at this time, and it is not the thing for me to do, to go into all the different kinds of crowns and caps that we have used that we consider pretty suc-

cessful. There are many satisfactory crowns, many satisfactory ways of treating these teeth; but I will bring to your attention two or three cases that have been quite satisfactory, and these cases are in my own mouth.

In 1880, I think it was, I had the misfortune to break off my left superior first bicuspid. It was just about that time that the gold caps were beginning to be talked about. I made a simple straight gold ferrule for this bicuspid, and it was put on by a gentleman who was in the same building with me. That did perfect service, and if I remember rightly, was doing good service, except that the occlusion was not quite perfect, in 1889. It had been on nine years. I had that cap taken off, the end contoured, and the occlusion properly adjusted, and that cap was put back in 1890, and, so far as my recollection goes, it has never been disturbed from that time to this. It is in my mouth now, and is doing good service, and I should be glad to show it to you if you care to see it.

The second bicuspid on the same side was subsequently broken off, and a gold cap was put on to that in 1892. That did not last as well as the one I have just spoken of. In 1898, six years later, that cap loosened and came off. The pin that was put into the root (it was a cap with a pin put into the root) separated from the cap. It was not soldered to the cap. In 1898 this cap came off. The pin was again adjusted in the root and the cap put on, and is there now, doing good service.

In 1893 both of my right superior bicuspids gave out, and one of them was badly decayed and had been "tinkered" with more or less and a hole drilled through the side of the root, and it was in rather a weak condition. These teeth were treated in this manner (illustrates on the black-board). If possible, imagine that those are two bicuspid roots, quite badly decayed. I had put rather narrow bands of quite thin platinum around both of these teeth. These bands were put on as closely as they could be made to fit, and with a pressure, and were as tightly adjusted as they could be. Then there was a pin put down into the root and anchored, and then these bands were filled with amalgam. Both were treated in the same way. I was busy, and my friend who did the work was busy, and those were left. Of course those pins did not stick up very far, but they were good-sized pins, and they were not uncomfortable. I wore those bands without anything more being done to them for about a year. Then one of the bicuspid (I think it was

the second one) was so very weak that the dentist who put the caps on for me said he thought it would be a good idea to join those two caps together, and so the crowns or caps were put on a sort of twin crown, just gold caps. They were put on in 1894, and are on to-day. That makes about eight years next July (I think it was in July).

I cite this as evidence that crowns can be put on, that they can be put in a cleanly condition, and that they will last a good long time. I often take a root and make a cap, the same as we all do, over the top and let the pin stick up a little like that, and cut this down so that, if it is a front tooth, or near the front, the gold will show very little, or none at all, and then, if it is a place where I do not wish to have the gold show, I have a porcelain crown cemented on.

Dr. Perry, of New York (I think), in some paper that he published some years ago, remarked that he liked to have the crown part the weakest part of the operation, so that if anything broke it would be the crown that would give out, leaving the cap and pin intact. If anything breaks, let the porcelain break, and then all you have to do is to have another top carved and put on. I think that is a very good point to have in mind when making crowns: have it so that if anything breaks, the top or crown part itself will give out before the anchorage. This same Dr. Perry published in the *INTERNATIONAL DENTAL JOURNAL* of March, 1895, an article which is full of good things, and I want to read to you a short extract from it. Many of the young men have already heard this. (Reads extract.)

If any of you wish to see the specimens that are in my own mouth, I should be very happy to show them.

President Werner.—Those who wish to can look at the specimens, and at the same time we can listen to some other remarks on the subject. It is certainly a very interesting subject.

Dr. Chase.—I will say that I have had a number of cases in molars where the buccal mesio-distal walls were gone and very much of the palatal wall. The teeth have been devitalized, I have put posts in the root and with a matrix built those teeth down with amalgam. And I have some three cases that I know of where I contoured the teeth, and I have seen those fillings within the last year, and they have been in three years and are just as good as ever. I think they have given as good service as a crown.

Dr. Stanley.—Speaking about the restoration of molars reminds me of a case that recently came to me for treatment. The patient, a young man, had been suffering intermittently for two or three days, and located the pain in the right superior first bicuspid, which was an old offender, and, to use his expression, had been tinkered with a good deal. The tooth happened to have two roots. It required quite a little nursing before they could be permanently sealed, one treatment being to drill through the alveolus; but we finally succeeded and set a porcelain crown. Before the tooth was in a healthy condition the patient complained of pain in the lower jaw.

There was an innocent-looking gold cap on the first molar. He said that when he put his thumb-nail under the edge of the cap and lifted it up it relieved the pain. I lifted it up and off, and should think it might have given relief from the amount of pus I found. While living in Boston he had been in the hands of a Tremont Street operator.

The cap had been on but a few years, but the tooth had not been properly excavated and filled before this was done, so decay progressed and caused the death of the pulp. After the roots were in a healthy condition I filled them with paraffin and aristol, a preparation I frequently use. A root-canal dryer will cause this to flow readily as far as the canal has been opened. Then, after a thorough excavation, I treated the tooth with nitrate of silver. This I like to do when there is no possibility of it showing.

So much of the crown was gone in this case that I fitted a matrix band and built the tooth up with amalgam, the same as I did for Dr. Chase, and subsequently put a gold cap over this foundation. I feel as sure of the usefulness of this tooth for a long period of years as any of us can of a pulpless tooth. An upper molar on the left side was similarly treated.

The matrix is one of the most useful aids in filling many cavities. About the simplest form is the one I will pass around. You will observe it is a very thin piece of metal, one edge being folded upon itself, and holding the silk ligature, which you simply tie around the neck of the tooth.

If you will send one dollar to the International Dental Manufacturing Company, 503 Fifth Avenue, New York City, you can get several sheets of different thicknesses of very fine matrix metal, which I prefer to the flexible steel.

To-day I do not know what is a good crown. I use more of the Logan than any other. I am not satisfied with banding the root. I believe that in ninety per cent. of the cases the original idea of the band—viz., to prevent the root from splitting—is not only unnecessary, but harmful.

If the idea is adhered to, the strength required demands a band of some little width, the adjustment of which is very apt to sever the attachment of the gum. A ledge is left, irritation and inflammation follow, and in a few years receding of the gums. The normal condition should be preserved in all cases as nearly as possible.

Dr. Boutwell.—I would like to have some of the gentlemen who have had more experience in the matter than I, tell me what the difference is in the life of a tooth where it is built up with solid filling and a gold crown. It seems to me, in thinking it over, that possibly the thrust might be more evenly distributed over the surface of the tooth where it was built up with cement under these gold crowns, that the whole tooth would receive the thrust equally; whereas if a molar was built up with a large filling, one side would possibly receive a little more than the other. Is there any difference in the lasting qualities of the tooth?

Dr. Reed.—I was much interested in the doctor's question. I presume you mean as regards the permanency of the operation, the life of the tooth. It seems to me there could be hardly any question about the permanency of the operation. The gold crown would be far more permanent; and as regards the life of the tooth, I should say a well-fitted gold crown, in a case where there is very little of the crown left, would be the most permanent operation, particularly if the bite is very close.

Sometimes where a large mass of porcelain can be used, from an æsthetic point of view, an all-porcelain crown with a gold band is very much better, and perhaps fully as permanent, if the bite will allow it, because the strength of the bite of porcelain is in proportion to its bulk. If the bite is very close, most any sort of filling, or any sort of a porcelain crown would lack permanency, in my mind. It would certainly fracture and give out.

I think that bands and crowns can be constructed properly so that the articulation and interproximal spaces shall be about as they were before the decay commenced. Of course, it is hard to make rules about it, but if they are properly constructed, and we mix a

little brains with the operation, we can have a very clean result and practically self-cleansing spaces, both mesial and distal.

The crown that Dr. Clapp spoke of I think is one of the best crowns, from an æsthetic point of view, that there is for anterior teeth. I remember it appealed to me when Dr. Smith spoke of it. I believe he described it. You have a transparency, and not the dead look that you get to a crown that is backed up with either gold or platinum. I think it is a very good crown.

Dr. Estabrook.—I would like to speak about treating the ends of roots with nitrate of silver. I think it is sometimes done indiscriminately, and results rather badly. I have seen cases where anterior teeth have been treated in that way, and even a little recession of the gums showed a jet-black root there with a nice crown protruding from it.

Dr. Smith.—Speaking of the Perry crown, I have had difficulty in getting them carved right. Of course, if a man like Dr. Dickinson does it, it is a different story. The old-fashioned pivot tooth was made with the hole going down in the centre. Consequently it was very weak. Now, in the Perry crown the difference is that the opening goes down directly towards the point, and you get a much stronger tooth.

In performing the operation of crowning a central incisor, you want as much depth of pin into the tooth as you can possibly get. As Dr. Clapp read from Dr. Perry, you would rather have the tooth give out than the root. It is rarely that I have a tooth give out. I have the hole made as deep as possible.

Dr. Reed.—I have had occasion several times to try to get the pin out of the porcelain after it had been cemented in. I boiled it in nitric acid for nearly half an hour, and had to give it up in the end. I had to break the porcelain in order to detach the pin. It is quite remarkable.

Dr. Fernald.—I have had the same trouble with teeth breaking off as Dr. Smith describes, and that leaves the posts so short that you cannot attach to them. In that case I carve the tooth myself, with a little box or platinum tube, quite heavy, fitting accurately over the end of the post, and the tooth cemented on, and I have had no trouble since.

Dr. Dickinson.—Before the subject is closed I would like to say that I have done a little carving, and have been in the habit of baking the pin into the crown, and I have asked some people I have

carved for why they drilled the hole and then cemented the pin in, and they said it was easier to grind. I think stones can be had so that you can grind them perfectly well, and I think it is an easier way all round to have them baked right in, and then, even if your pin is shorter, it seems to be perfectly strong in the long run.

President Werner.—What is the objection to always baking them in?

Dr. Dickinson.—I do not know why it is done that way, unless they find it easier to be able to grind all over the surface of the crown instead of close to the pin.

Dr. Chase.—I have had a number of cases where I have used the Davis crown; in fact, I use that always in preference to others. You can bend the pin that comes in the Davis crown with a pair of pliers, and you can slip the crown on very easily, and it is much easier to grind up. You can bend it either way. You can bend the part of the pin that goes into the crown; it does not injure the pin in the least, and I find it is a great advantage.

Dr. Smith.—Why isn't that a factor in splitting the root?

Dr. Chase.—I never have had it happen.

Dr. Dickinson.—In answer to Dr. Chase, I should like to say that, if there is a case where the teeth tilt or tip in such a way that the crown with the pin baked or cemented in will not go directly into the root because of that bend, the pin can be bent so that it will be parallel to the line of the teeth before it is baked into the crown, and when the crown is baked you have a pin going in parallel with the teeth, which seems to clear away that trouble. Of course, there is no trace on the porcelain, because it is done before the porcelain is put on.

Dr. Howe.—I would like to ask Dr. Dickinson if he has used the mineral paints to match the other teeth? It occurred to me to-day to get some mineral paints, such as can be obtained at any art store, and use them to color teeth that you wish to put in to match the other teeth. You can get any shade you desire between the yellow and white, and I have tried it to-day on some artificial teeth, and it can be used to very great advantage, not only with crowns, but it seems to me that a person could color inlays to match perfectly. I think there would be no doubt as to its permanency. I would like to ask Dr. Dickinson if he has used them.

Dr. Dickinson.—The different shades are overcome by having the pure white, and gradations from that up to what I think is a

deeper yellow than is ever seen in the mouth. Aside from that, you can make stain effects by the distribution of the enamel over the yellow,—by having it thick so that the yellow does not show through, or thin so that it does.

President Werner.—I wish Dr. Howe would explain to us precisely and minutely the direction in which he is experimenting and investigating in regard to these mineral paints that he uses, or anything else, on crowns that are more or less poorly matched. I understand he has quite a little experience in that direction.

Dr. Howe.—I must say that the idea is not my own at all: it is from Dr. A. H. Hart, who first suggested the mineral paints to imitate the tobacco stain. You not only can get the dark-brown stains, but any shade you wish. My experiments thus far have been only with these other shades. But it fuses at a lower temperature than the ordinary bodies, so that it can be used on almost any crown. I fuse it in an electric furnace. It takes about two minutes.

Dr. Estabrook.—I should think the objection to these mineral paints would be the same as the low-fusing porcelain bodies. In time they would change color in the mouth. Everybody that has had experience with very low-fusing bodies is aware that they change and darken in the mouth. I should think those mineral paints that have a large percentage of glass in them would change.

Dr. Howe.—These have not had the test of time, but it seems to me as if the stains that have been used for years upon chinaware, and have stood the test of wear, would not wear away in the mouth or change color in the least.

Dr. Estabrook.—I do not mean wear away, but change color. No doubt these glass fillings that have been put in years ago, if they had been left out of the mouth would not have changed color.

Dr. Howe.—I hardly think there would be any change with glass porcelain fillings. These mineral paints should have a background of porcelain, and the porcelain surely will be permanent, and your cement or background is not in the inlay.

Dr. Stanley.—Does Dr. Dickinson know anything about the crown material that White's people put on the market a short time ago?

Dr. Dickinson.—I never have used anything but the bodies that we make ourselves, so I do not know anything about that. Of course, the higher fusing a body is, the greater strength there is,—the less glass. Do you know whether those are high-fusing bodies?

Dr. Stanley.—It is not a particularly high-fusing body. I think it is lower than White's inlays.

Dr. Dickinson.—I should think the probabilities are it would not be as strong as Woodman's body.

Dr. Stanley.—Two cases of recent treatment come to my mind. One of my regular patients experienced some little trouble with the right lower second molar, such as might arise from a metal filling on the buccal surface. I removed such a filling, which had been in two years or so. The cavity was not deep, but very sensitive. I refilled it with copper cement. In a few days the patient came in and told me what a time she had been having. The face was somewhat swollen, though better than it had been. Every test I gave indicated live pulps in this and the adjacent teeth. Nature and a little time straightened the case out for me, and, so far as I know, the change of filling-material ultimately brought relief.

The other case was of a young man who received a fall from his wheel, which, with the aid of his pipe, broke the left lateral and cuspid, the latter being broken in a perfectly straight line across the labial surface, but extended under the gum on the lingual surface, about one-third of the tooth being broken off, with the rounded end of the pulp left well exposed. The lateral was not so badly broken. I gave him gas and removed the pulp. While debating what I had best do with the case he incidentally took the broken tip from his pocket. It went so accurately into position that I drilled into the cusp, selected a good strong iridio-platinum pin, and reset the broken point, with the result that it was the finest piece of "porcelain" work I had ever done.

President Werner.—Are there any specimens, or any incidents of office practice to be reported?

Dr. Marvel.—I was called out about a month ago to see a newly born baby, which was to me a very interesting case. Instruments had to be used at the birth, and the jaw was lop-sided. The left side of the jaw struck, and the right side was certainly half an inch from the upper ridge, to such an extent that the baby could not suck and there was danger of the child dying of malnutrition. I was called to see this child, and naturally I was somewhat feazed. I could see that a lead-pencil put between his teeth made it rather difficult for him to swallow. In consultation with the physician we decided to chloroform the child, and I took that little lower jaw and manipulated it. Of course it was not exactly gelatinous,

but very flexible. I bent that jaw around so it came all right. When the baby came out it was naturally very hungry, and it took the breast readily, and the child has thrived ever since. The age when I saw the child was four days. Of course, the child does not take the breast until the third day anyway. On the extra day of course the child wanted food, and wanted it badly. Something had to be done. Whether this jaw was bent while being delivered or not, I do not know.

Dr. Boardman.—As this Society has increased very rapidly the last few years, in fact, doubled in the last seven or eight years, to meet the growth of the Society the constitution and by-laws need amending somewhat; and I would move you, sir, that a committee of three be appointed by the chair to alter or amend the constitution and by-laws and report the same at the next regular meeting for action. At the present time the secretary has to keep a record of all absentees, and it is a good deal of work, and not of much use. It may have been useful when the Society was small, but now it seems to me it should be amended in that respect, and in some others.

Voted.

On motion, adjourned.

H. W. HALEY,

Editor Harvard Odontological Society.

Editorial.

THE DANGERS OF PATERNALISM.

THE trade journals have now become so cheap, and in some cases so well conducted, that the question naturally arises to many, Why should not the profession give up the attempt to control the publication of its records; why not allow the supply houses to assume the entire charge of the intellectual output? They are trained commercially, they know the money values of the materials with which we work, and how to put such materials upon the market. Why should they not also be able to judge of the value of our professional ideas, and know best how to put them on the market?

If this course of reasoning is allowed, we will find that a few principles which are cherished either openly or secretly by all members of the profession will have to be abandoned. In the first place, as to the idea that a liberal profession should be perfectly free and unbiassed in its investigations and in the expression of the same. How is this possible if our periodical literature is in the hands of manufacturing houses which have a commercial interest in the results of our investigations? If our work suits them, it will undoubtedly be granted full expression and illustration; but if it runs counter to their interests, business instinct and business practice will forbid its expression. Here, then, is a conflict between a professional principle and a trade principle, and the professional principle must be abandoned.

But a still greater harm comes to the profession from trade journalism by the paternalism which is thereby engendered. The trade virtually says, "My professional children, I recognize your skill in mechanical things and your advancement along intellectual lines, and I am doing my best to furnish you with suitable instruments to carry on your work. I expect as a result of your education and experience you will have ideas to express, but pray do not undertake the publication of these ideas for yourself. We have a trade with you the profits of which will amply allow us to conduct the journals in which your thoughts can be expressed and which can be sold to you at a nominal cost. Our tempting display of instruments advertised in these journals is sufficient reward for us. We will save you the trouble of collecting and printing your ideas; we will write editorials for you and outline the policy which you should take on important questions. By saving you the trouble of thinking, you will have so much more time to exercise your mechanical skill and make money. That is what we are both mainly striving for."

To this proposition the majority of dentists apparently agree. They have been so long accustomed to the paternal oversight of the trade that they see no objection to having their ideas collected and published for them, especially as the cost of publication is merely nominal. Such paternalism cannot contribute to the elevation and development of a profession, it is a form of bondage. Now, bondage may be so pleasant that it is not recognized as such. If it contributes to our ease and is economical we forget its repressing power. The trade would make us forget the bondage which must

go with trade journalism by offering us their journals so cheaply and with so little effort to ourselves. If we accept what they so generously offer, we ought to feel bound and indebted to their commercial products. It should finally be borne in mind that at the present day the tendency of all trade is to combine and thus diminish competition and destroy individual liberty. This process has been going on for a long time among those who furnish us with supplies. It is possible that this policy may ere long be applied to trade journals, and all be eliminated save one. How short-sighted, then, to give over to foreign hands matters of such vital interest to the profession. An independent journal managed by dentists and for dentists stands as a protest to such action

P.

THE ORGANIZATION OF INTERNATIONAL DENTAL CONGRESSES.

To many of our readers the continuation of the controversy in regard to the Fourth International Dental Congress may seem an unprofitable waste of time, and it would be were it not for the fact that the real issue is not personal, but involves not only this congress, but any others that may be held in the future.

The question that requires an answer is, Have these congresses, from that held in Paris in 1889 to the one proposed for 1904 at St. Louis, been a continuous series and regulated by a resolution or resolutions passed by the original congress? It is presumed no one will attempt to answer this affirmatively, for there is, apparently, no evidence that any attempt was made at the Congress in 1889 to regulate any succeeding one. It was regarded as strictly an international affair under national management, and any attempt to control other nationalities, in a similar effort, was evidently unthought of, and, if it had been undertaken, would doubtless have been resisted as an unwarranted interference with national rights.¹ When the "World's Columbian Dental Congress" in 1893

¹ The resolution adopted by the Congress of 1889 was as follows: "The vote of the Congress at its last session, September 6, 1889, declares that, under circumstances similar to those giving birth to the present congress, it is desirable that another congress be convened in the United States in 1893, at the time of holding the approaching World's Exposition." This is simply advisory, no attempt being made to enforce it. Dr.

was originally under consideration, there is no evidence to show that the previous congress was considered further than as an international organization, the good points of which might be worthy of adoption and the mistakes rejected.

In the *Dental Review*, of Chicago, for December, 1902, there is an exceedingly well-prepared paper on "Internationalism in Dentistry," by Dr. C. N. Johnson, in which only indirect allusion was made to international dental congresses, but confined the consideration of the subject to a temperate view of the international aspects of dentistry. This paper was, without apparent reason, made the text for a lengthened and evidently carefully prepared response on International Dental Congresses, by Dr. Harlan, of Chicago. This was placed in the discussion that followed the reading of the essay. It had been evidently prepared in advance to serve as an answer against the almost universal criticism made in this country in opposition to the action of the committee appointed by the Fédération Dentaire Internationale to look after the interests of the Fourth International Dental Congress. The active part that Dr. Harlan has taken in dental congress matters, both at home and abroad, entitles whatever he may have to say to respectful consideration. The question must, however, be decided upon the facts of history, and those obtainable by the present writer do not warrant the claims made by the committee appointed by the Fédération.

For a better comprehension of the subject reference must be made to the original organization of the World's Columbian Dental Congress. The following forms a part of the original resolutions appointing a committee to carry out the proposed second international congress:

"WHEREAS, It is desirable that any meeting then held should be at the instance of the American Dental Association and the Southern Dental Association, and organized by a joint committee by them appointed."

This was followed by a resolution appointing five members from each national organization, with power to add to its membership one, three, or five more members.

Harlan, in his address before the American Academy of Dental Science, on "The Evolution of the Dental Congress," November 16, 1892, says, "A resolution was offered on the last day of the assemblage (Congress, 1889), which did not make it obligatory on a committee to call another congress."

In the report of the World's Columbian Dental Congress, prepared mainly by Dr. A. W. Harlan, secretary-general, it is stated, "The World's Columbian Exposition organized the World's Congress Auxiliary. . . . The purpose of the World's Congress Auxiliary is to establish a series of congresses, in which the best workers in general science, philosophy, literature, art, agriculture, trade, and labor may meet to present their experiences and results obtained in all those various lines of thought up to the present time."

It is a well-understood fact in the history of this congress that there was a sharp conflict between Mr. Bonney, president of the Auxiliary, and the committee. Some were strongly opposed to the word congress, preferring to call it the "World's Columbian Dental Meeting," but Mr. Bonney settled this by insisting that it should be called a Congress, and it was so named.

It will be observed, from the foregoing, that while the Congress was originally called by the American and Southern Dental Associations, the real organizing power existed in the World's Congress Auxiliary, and that no intimation of any previous authority being given from the Congress of 1889 was mentioned, nor was the said congress considered in connection therewith.

This, the Second International Dental Congress, was held, and the entire dental world is familiar with the results. Its success warranted repetitions of similar organizations, to be held as circumstances might dictate. On page 209, Vol. I., of the Transactions of the Columbian Dental Congress will be found a resolution introduced by M. Chas. Godon, of Paris, in which he proposes a method by which future congresses may be held. The resolution was deemed of sufficient importance to warrant its presentation in the French, German, Spanish, and English languages. This resolution, covering as it does, the first attempt to manage dental congresses, is worthy of being repeated in full.

"The undersigned foreign delegates, considering the success achieved by the World's Columbian Dental Congress, as proved by the number of its members, and by the importance of its accomplishments, desiring to assure for the future the reunion of similar congresses, have the honor to present the following resolution:

"This Congress considers: 1. That under similar circumstances to those which led to the Congress of Paris in 1889 and the World's Columbian Dental Congress of Chicago in 1893, it could

not be otherwise than advantageous to the profession to have similar International Dental Congresses in the future. 2. That it should be *delegated to the foreign dental societies to determine for their respective countries the time and place for the meeting of such future International Dental Congresses.*" (Italics ours.)

This was signed by fifty-one members from foreign countries, ranging from France to Japan. In the discussion following the introduction of this resolution Dr. Cunningham, of England, emphasized it by saying that the organization of such congresses "should be left to the national dental societies of the respective countries to do their best to initiate such a movement." The resolution was unanimously adopted. There was no effort made to appoint any committee, nor was there *authority given anywhere*, in this voluminous report, for any set of officers to carry out the suggestions of the resolution. It would seem, in view of the fact that this congress had no power to pass a binding resolution such as this, that it would have been the duty of the president of the congress to have exercised his parliamentary privilege and ruled the resolution out of order.

The readers of this article should note the foregoing fact, for it bears directly on a statement made by Dr. Harlan where he says, "Finally, when they (the French dentists) wanted to hold a congress in Paris, what did they do? They wrote to the men who were connected with and closed up the World's Columbian Dental Congress, and *wanted to know if they could have authority to organize a congress in Paris. That authority was given, and they went to work and organized a congress in Paris.*" (Italics ours.) Dr. Harlan's statement that such a request was made is without doubt correct, but what are we to think of the additional fact that *he or they* gave authority to hold this congress, an authority he or they did not possess? Who, it may be asked, were the persons who presumed to speak for the World's Columbian Dental Congress? When that Congress closed its sessions the only work left with the officers, and especially with the secretary-general and the treasurer, was to close out the report of the transactions and have the accounts audited. The Congress, and all connected with it, ceased to have further life or power. The resolution of Dr. Godon made no provision for any one to give consent to establish a congress in 1900, and the dentists of Paris could not have understood the situation when they made the request, for had they referred to the Godon

resolution they would have found that it was left to "each country to determine the time and place of each congress;" and further, they then would have discovered that there was no committee or other body empowered to grant such a request. This brings the history up to the organization of the Third International Dental Congress of 1900.

It is unnecessary to consider the organization, or the great success of this congress; all that is a matter of historical record; but the resolutions passed at the closing of the Congress are all of them important, and several bear directly upon the organization of the proposed Fourth International Dental Congress of St. Louis.

"Resolution No. 11. That an International Federation shall be created." Adopted.

"Resolution No. 12. That the national committees that were organized for the Congress shall constitute the International Dental Federation." Adopted.

"Resolution No. 13. That at the last session of the Congress a committee of seven or nine members shall be nominated to consider the formation of the International Dental Federation, to propose members thereof for the approval of the national committees, and to prepare the next International Dental Congress."

"Resolution No. 14. The International Dental Federation shall be composed of all the national committees represented by an Executive Council.

"The first Executive Council, comprising seven or nine members, will be nominated by the members of the Third International Dental Congress, in its last general session, on Tuesday, August 14, and its *powers will expire at the opening of the Fourth International Dental Congress*, of the organization of which it shall have charge." (*Italics ours.*)

Resolution No. 15 concerns itself with the time of holding the Fourth International Dental Congress, "which shall be held (at the latest) in five years in the country which may seem best to the Executive Council."

There is some difference in the translations as given by Dr. Harlan and the report from which the writer quotes, but this is not sufficiently marked to require comment. In Resolution 14 he translates that the committee "is *charged to organize* the Fourth International Dental Congress," and the other is, "The organization of *which it shall have charge.*" There is quite a difference in

the two renderings, although both give a certain power to the committee.

The question now resolves itself into, 1. Had the Third International Dental Congress, Paris, 1900, the power to confer on any subordinate organization the authority to take charge of future congresses? and 2. If this power was correctly conferred, had the *Fédération Dentaire Internationale*, the subordinate organization alluded to, authority to transfer that power to a committee to supersede that appointed by the dentists of the country proposing to hold the congress? It is very evident, from the wording of the resolution introduced by Dr. Godon in the World's Columbian Dental Congress, that no such power was given. Even admitting that said authority was transferrable from the Congress of 1893 to that of 1900, there was no body from the former congress to whom was given the duty to call a future international organization. Further, the delegates sent from various countries to the 1900 congress were not instructed to vote for a series of congresses; hence in so doing it was upon their individual responsibility and without the knowledge or authority given by their constituents. Those who joined the Congress without any special constituency certainly exceeded their limitations when they voted to bind other countries. The writer is not aware that this action of the Congress of 1900 has ever been confirmed by the dental organizations of the world, and until this is done it is not binding on any of the national organizations.

If it be accepted that the Congress of 1900 had the power to confer authority upon a subordinate organization to organize international dental congresses, then it must be conceded, upon a fair interpretation of the resolution, that the committee of nine has the power to assist in the organization of the Fourth International Dental Congress, but its *power ceases the moment the president, with his gavel, calls the first meeting to order, and all further management must be left in the hands of the committee appointed by the National Dental Association*. Inasmuch as this latter committee has the entire responsibility, it should have the most prominent place in all preliminary movements looking towards the organization of the Congress.

There is evidently a wide difference in the ruling of Dr. Godon, president of the *Fédération Dentaire Internationale*, in the two letters sent by him to this country. The quotation given in the

December number of this journal states distinctly that the committee of nine appointed by the Federation should "collaborate to the good organization of the Congress, and will place itself at the *disposition of the organizers.*" (Italics ours.) In the letter to Dr. Harlan, dated October 8, 1902, he states that this committee of nine "is commissioned to organize the Fourth International Dental Congress." He simply directs that the committee shall place itself "in communication with the president of the National Dental Association," but not a word about collaboration with the committee appointed by that body. He does write of the organizers of the Fourth Congress that they "ought to give to the committee, which we have named, the powers necessary to accomplish its mission." Exactly what Dr. Godon means by this must remain for future explanation. If, as he says, he must legally abide by the decision made at Stockholm, no other interpretation can be given to his ruling, but that the committee of the National Dental Association," but not a word about collaboration with the nine appointed in that city by the Fédération. If this is the correct view of his letter, and there is no appeal from this decision, then the Fourth International Congress will have died in its birth, as no American committee would for a moment entertain such a proposition. It is very evident, however, that the first letter, addressed as described, really contained what Dr. Godon considered the spirit of the original resolution,—that there must be a joint effort of both committees in furthering the great work.

If there is any reconsideration of this subject at Madrid in April, one fact should not be overlooked,—that the original invitation of the National Dental Association to the Fédération Dentaire Internationale to take part in the Fourth International Dental Congress is practically an invitation from the dentists of the United States to the dentists of Europe to join with them in this Fourth Dental Congress. To treat this as has been proposed means a discreditable and discourteous act. Will the Federation, at its meeting in Madrid, consent to occupy this position?

From the quotations made it must be evident to any unprejudiced reader that the Second International Dental Congress was simply a creation of the Columbian Exposition, and had no authority to repeat itself in any other country, and that the Third International Dental Congress exceeded its authority in attempting to make these congresses a permanent organization and subject to its

ruling, and that the *Fédération Dentaire Internationale* has no power to force the National Dental Association of the United States to accept a committee appointed by that body. The entire subject needs careful revision and a foundation laid upon a legal basis that will free it from all criticism. In order that this may be accomplished, the writer would suggest that at the next meeting of the Federation, to be held in Madrid, Spain, in April, 1903, this body should request the committee of nine to withdraw all active efforts in the preliminary work of the Fourth Congress and occupy a subsidiary relation thereto. And further, he would suggest that the *Fédération* should request the committee of the National Dental Association to incorporate in its announcement of the Congress that an effort would be made at said Congress to have rules formulated for the formation and government of future congresses, and requesting dental societies throughout the world to properly instruct their delegates as to the course they would wish them to pursue. Until some such measure is adopted there will be constant dissatisfaction with dictatorial assumptions of unauthorized and necessarily illegal bodies.

For the committee of the Federation to attempt to assume control under present conditions would be not only undignified in character, but a subversion of international comity upon which all international congresses must be based. If this be not closely adhered to in their formation and work, these organizations will fail to carry out the original intent,—that of bringing together into more harmonious relations the diverse sentiments naturally developed by isolation and lack of that cosmopolitan spirit so essential to the formation of a truly international professional spirit.

In connection with the foregoing it is stated that the president of the St. Louis World's Exposition has announced the organization of World's Congresses to be held in St. Louis in 1904. Howard J. Rogers, chief of the Department of Education, is to be the Director of Congresses. The Advisory Board to work in conjunction with him will be as follows: Chairman, Nicholas Murry Butler, president of Columbia University; William R. Harper, president of the University of Chicago; R. H. Jesse, president of the University of Missouri; Henry S. Pritchett, president of the Massachusetts Institute of Technology; and Herbert R. Putnam, Librarian of Congress.

Power is given this board to determine the number and extent of the congresses, the special features of each, the prominent men to take part, the character of the programmes, and the methods of carrying out the enterprise. The idea is to give the series of congresses unity and connected purpose, and make their proceedings a valuable contribution to the world's literature.

It would seem from this that upon the consent of this board will depend whether the International Dental Congress will have a place at the exposition of 1904.

UNITED STATES CONSUL-GENERAL J. H. WORMAN.

UNDER the heading of Foreign Correspondence will be found a letter from Consul Worman to the editor, and also a copy of a letter sent to Dr. Crouse, of Chicago. In these two letters Consul Worman complains that justice has not been given him, and further that false charges have been made involving his integrity. He very properly seeks redress, and demands that the question of the disposition of the moneys collected by the Association of Dental Faculties and the National Dental Association should be settled to his satisfaction and that of the dental profession.

The writer has never been able to understand the statement made that Consul Worman's evidence was not of much value. From a legal stand-point this may have been true, but the manner in which this evidence was treated seems to justify the opinion that further explanation is needed.

Consul Worman never received anything to remunerate him for his services in collecting evidence abroad regarding the diploma traffic, and whether this was valuable or otherwise, it was largely through his personal efforts that the condition of things in Illinois and the State board was brought to the attention of the two societies named, and the money raised. The committee having this fund in charge should, at least, comply with Consul Worman's wishes and relieve him of the unjust charge that all his work was "bought testimony."

Bibliography.

HOW TO SUCCEED IN THE PRACTICE OF MEDICINE. By Joseph McDowell Mathews, M.D., LL.D., President of American Medical Association, 1898-99. Author of "Mathews on Diseases of the Rectum;" Ex-President Mississippi Valley Medical Association; Professor of Surgery, Hospital Medical College, etc. John P. Morton & Co., Louisville, 1902.

It is not often a reviewer of a medical or dental book reads it with real pleasure. He probably regards it as a duty that cannot be avoided if he will do justice to the writer, publisher, and himself. In this instance, however, the writer found himself so infused with the spirit of the author and so invigorated with his delightful style and valuable ideas that he read the book through from first page to the last, and left it with the conviction that it should be in the hands of every young medical and dental graduate, and for the older practitioner it would possess intense interest; for between the lines he could read his early experiences, recalling amusing recollections, and at others pointing to mistakes and neglected opportunities.

The book has been written for medical graduates, but it applies throughout with equal force to all professional men, and the young dental graduate can read it with interest and instruction.

The author says, in his preface, "The book is enlarged that it may interest all members of the medical profession, and the laity are earnestly requested to read it. . . . It has been painful to me to see many of my professional friends die and leave their families in actual want. The reason is plain that it was either their own fault or the fault of their clientele, and how to prevent this happening to others is the main object of the book."

The author is an ex-president of the American Medical Association and a medical author of national reputation, and anything he may write upon the broad subject of "How to succeed in the Practice of Medicine" should find attentive readers everywhere.

He utters these great truths when he writes, "After an experience extending over twenty-five years as teacher in a medical college, I beg to submit the following conclusions:

"1. The better educated one is, the better prepared he is to understand the teachings of the great science of medicine.

"2. Upon the foundation of learning as laid by a common-school education men have attained to the highest positions in the medical profession, both as teachers and practitioners.

"3. Many men with the highest education that could be afforded by Harvard, Yale, or Princeton have signally failed as practitioners of medicine.

"4. Many men of self-education have attained to the highest positions known in the medical profession."

These conclusions are equally applicable to dentistry, and are in entire accord with the writer's forty years' experience as a teacher in his profession. The result is all dependent upon the man, but, given equal ambitions and natural tastes, the man with the superior foundational education will outstrip the one lacking it, for the latter is always struggling to overcome the defects of his early education.

To the "young doctor who changes his location several times before becoming permanently settled" he has this to say:

"We are to presume that you visit the place recommended; it has been told you that it is a first-class location because there are no doctors there; no, not within miles of it. . . . It is an insult to your intelligence to hint such a reason. Are you afraid of honest competition? If so, you had better go back to school. . . . Do you not want the companionship and the help in time of need of some good, kind brother in the profession?"

This will apply equally as well to the young dentist. It is not ordinarily the most favorable location where there is not a dentist for miles. It is very certain to be a place where money is limited and banks are unknown, and without these prerequisites to success the work of the dentist will be regarded as a luxury not attainable by the impecunious population. Taken as a whole, it is probable that the most successful dentists are those in towns of from forty to fifty thousand population.

It is not possible to quote all the good points in this book. It is rich in anecdote, and the illustrations, although few in number, must appeal to every practitioner, especially that in which the young graduate is hanging out the first sign. Has any one ever forgotten this first sign? How formidable it looked in broad

daylight, and how fearfully and anxiously the first patient is looked for as the result of this wonderful announcement!

Every young medical and dental graduate could read and study this book with profit, and careful attention to its instructions may be the means of leading many to pleasant surroundings, delightful homes, and eventually into a remunerative practice.

The publishers' work is everything to be desired, in type, paper, and general make-up.

A MANUAL OF THE INJURIES AND SURGICAL DISEASES OF THE FACE, MOUTH, AND JAWS. By John Sayre Marshall, M.D., Former Professor of Dental Pathology and Oral Surgery, and Emeritus Professor of Oral Surgery of the Dental Department of Northwestern University; Attending Oral Surgeon to St. Luke's Hospital, Mercy Hospital, and Baptist Hospital, of Chicago; President of the Examining Board for Dental Surgeons, United States Army. Second edition, revised and enlarged. The S. S. White Dental Manufacturing Company, Philadelphia, 1902.

This book was so thoroughly reviewed in its first edition in this journal that the favorable opinion then held can only be transferred to the second, with the opinion that it has been greatly improved by some very valuable additions and with much, not so valuable in the first edition, eliminated. The questions following each chapter have all been removed. These were of no real value, and had the effect of lowering the otherwise high standard of the book. Another removal that especially appeals to the reviewer is the elimination of authorities quoted in almost every paragraph in the first edition. The constant reiteration of the same names became very monotonous.

The author, Dr. Marshall, is thoroughly at home when writing of surgical diseases and surgery, and the reviewer can only repeat what was said in the first edition with more emphasis in the second, that this book is not likely to have any superior, upon the subjects on which it treats, in this generation. It meets all demands both in its pathology and in its operative procedures.

The several chapters have been greatly improved by valuable illustrations. This is especially true of that on "Necrosis," which was rather weak in the first edition, but sufficiently extended in this.

Chapter XXXI., on "Leucoplakia," is altogether new. This pathological condition was very briefly alluded to in the first edition, but in this it is one of the most interesting of the book. The same can be said of "Actinomycosis Hominis," Chapter XXXV. It is fully illustrated, and explains very satisfactorily this peculiar phase of infection.

While the subject of "Tumors" is of great importance, it would seem that to give two hundred and seventeen pages to their consideration is an unnecessary extension of the size of the volume. It must be acknowledged, however, that the author has managed to keep the book down to the same number of pages as the first edition, a very important matter, as a bulky text-book is a serious evil.

The title-page remains with the word "Manual" at the head. This does not, in the reviewer's opinion, correspond with the high character of the book.

It is a satisfaction to find that this work has been appreciated, and that the demand has so early called for the second edition. That it will become a standard work upon the subjects treated there can be no question, thus demonstrating the oft-observed fact, that when an author attempts to write upon a subject, he must have lived through it in many years of experience, and this has certainly been true of the author of this valuable text-book.

A TEXT-BOOK OF SURGICAL PRINCIPLES AND SURGICAL DISEASES OF THE FACE, MOUTH, AND JAWS, FOR DENTAL STUDENTS. By H. Horace Grant, A.M., M.D., Professor of Surgery and of Clinical Surgery in Hospital College of Medicine; Professor of Oral Surgery in the Louisville College of Dentistry, etc. Illustrated. W. B. Saunders & Co., Philadelphia and London, 1902.

The author says in his preface that it "is the object of this work to present to the student of dentistry a text-book that will succinctly explain the principles of dental surgery applicable to all operative procedures, and also to discuss such surgical lesions as are likely to require diagnosis and perhaps treatment by the dentist;" and further he states, "An exhaustive analysis of the phenomena of inflammation and repair, as well as of the pathology of the essential processes of acute surgical diseases, is not desired by the student of dentistry during his college days." Perhaps if the student were consulted he would agree to this proposition, but

where, may it be asked, will he acquire this important knowledge if not in the college? This seems to be a most unfortunate position for an author to take at the very opening preface of his book, but it is the old story, that a dentist requires but little outside of practical procedures, and some teachers, acting upon this, proceed to ladle out this knowledge in the weakest possible portions. This is certainly not the position the teacher or author should hold towards the undergraduate.

The author begins his work with a chapter on "Bacteriology and Surgical Principles." Seven pages are given to the first subject, but the reviewer fails to find any space occupied with the latter, surgical principles. This is not very important, but indicates carelessness in the preparation of the book.

Chapter II. is devoted to "Inflammation," and the author has certainly carried out his idea promulgated in the preface that the dental student does not need "an exhaustive analyses" of a subject, for if the said student is earnest in his efforts to acquire a knowledge of inflammation, he will be forced to examine books of wider range than this. The histological phenomena following hyperæmia are not explained satisfactorily; indeed, it is safe to assume that it would be impossible for a student to secure a very clear idea of what inflammation means through the description given by the author.

While this is a marked defect in the chapter on this foundation subject, there is much to commend in the author's brief descriptions, both here and throughout the book. To one conversant with the subjects treated they appeal, as condensed statements, but the book is not written for these, but for students. The mind at this stage needs, above all things, detail. He must know the entire subject, or an attempt at instruction had better be omitted.

On page 29 the author recommends: "When hidden suppuration is suspected . . . the use of warm poultices" is recommended. He probably had not in view an alveolar abscess when this was written, but it would be rather dangerous advice to give a dental class without some further explanation.

The reviewer, in reading this volume of much valuable matter and, upon the whole, well prepared, has been constantly impressed with the feeling that condensation has been carried to almost unpardonable limits. For instance, sterilization of instruments is condensed into six lines, and the dental student is informed that

"dental instruments that are being used upon a septic case may be rapidly sterilized by dipping them in wood alcohol and passing them through a flame."

In the chapter on "wounds, including Shock," this, while reasonably well described, does not include the recognized danger of shock following dental operations. The author would do well to read Black upon this subject in the "American System of Dentistry."

The chapter on "Hemorrhage" is well treated, but the author seems to rely very much on Monsel's solution of iron to check hemorrhage. Very few dentists would think of making use of this agent in serious cases, for its well-known effect of lowering the tone of the vessels and inviting secondary hemorrhage makes its use very objectionable.

The general subjects of the book are generally well treated, but it is hoped when a second edition is called for that the promise of the preface that the "principles of dental surgery applicable to all operative procedures" will be more fully carried out. The author will remember that dental students in the twentieth century demand and should receive the same treatment that is accorded the medical undergraduate. Anything less means partial culture, and partial culture is only one remove from absolute ignorance.

The reviewer has felt called to rather sharply criticise the general method of this book, in the hope that a really good book may be made of it in the second edition. The author has the right idea of what is generally needed, but fails through a narrow conception of what dentistry requires in the teaching of the present time.

Domestic Correspondence.

ORIGIN OF THE DEGREE OF D.D.S.

TO THE EDITOR:

SIR,—A little while ago you wrote me regarding the origin of the degree Doctor of Dental Surgery. Recently, in connection with another matter, I have had occasion to look it up, and find that it came into being with the American Association of Dental

Surgeons, as part of their plan for the education and elevation of the profession.

The original members were carefully selected by the few who took upon themselves the organization of the society, and sent invitations to a number of dentists in whom they had confidence and who were in their respective communities acknowledged to be reputable and well-qualified practitioners. These came together at New York, on the 18th of August, 1840, at the American Hotel.

They met in convention and organized the Association. (See *American Journal of Dental Surgery*, vol. i., p. 157.)

For the information of the public, in order that they might know who were and who were not recognized by their professional brethren as reputable and well-qualified practitioners, provision was made for giving to those admitted to membership a diploma conferring the degree Doctor of Dental Surgery. All the original members were entitled to this on payment of a fee, and provision was made in Article I. of the By-laws, Section 10, for an Examining Committee who were to meet at least once a year for the examination of applicants for the degree of Doctor of Dental Surgery.

See, also, Article XII., Section 2, of the Constitution (*ibid.*, p. 161, bottom of page), where graduates of a regularly chartered dental college of the United States are exempted from this examination; also, Article I., Section 1, of By-Laws, and Section 5 of the same; Article IV. of the By-Laws; and, finally, page 169, "Eleazar Parmly is by resolution appointed agent of the society to present a petition to the Legislature of the State of New York asking for a charter, with power of conferring the degree Doctor of Dental Surgery."

All this preceded the first dental college.

I am unable to find any record of the society receiving a charter, nor yet of any action of the State Legislature giving to it the power of conferring degrees, and as at a later period the Baltimore college conferred the degree upon some members of the society who were entitled to it by these provisions, it may have been that the society found itself unable to carry out these designs. However that may be, it is beyond question that the degree originated with the promoters of the first National Dental Association.

This may be new to you, and perhaps by lapse of time may now be without interest.

WILLIAM H. TRUEMAN.

[The foregoing was the outcome of a query sent the writer: "How did the degree D.D.S. originate?" Inquiries of the Baltimore College of Dental Surgery failed to secure a satisfactory answer. It was then referred to Dr. Wm. H. Trueman, with the above result.—ED.]

Foreign Correspondence.

CONSUL-GENERAL WORMAN'S CORRESPONDENCE.

UNITED STATES CONSULATE-GENERAL,
MUNICH, BAVARIA, December 18, 1902.

TO THE EDITOR:

SIR,—Professor Miller has just sent me his copy of the report of the Proceedings of the National Association of Dental Faculties, and I learn therefrom, on page 113, that the evidence against Dr. J. H. Smyser, in connection with the Finley forgery and the Igney illegal sale of license, was obtained by the prosecuting committee. This is a mistake and should be duly corrected. That information was given by me, and I myself obtained that evidence before leaving Milwaukee, by careful study of the minutes of the Board of Dental Examiners of Illinois in the case of Finley, and put it in the form of an affidavit before United States Senator Quarles at Milwaukee before proceeding to Chicago, and before such prosecuting committee had been recognized or even appointed.

Secondly, the information concerning Igney was obtained by me by anonymous correspondence while I was engaged in my investigation in Chicago, after the meeting at Milwaukee, and turned over by me to the attorney of the prosecuting committee, Mr. Knickerbocker, with whom this case was worked up before I left the city of Chicago.

As these two cases are the most positive evidence ever furnished against said Smyser, and as upon the strength of this evidence I caused the removal of the old Board of Dental Examiners by the governor, it is but fair that the profession should see to it that due correction is promptly made.

Sincerely yours,

J. H. WORMAN,
United States Consul-General.

UNITED STATES CONSULATE-GENERAL,
MUNICH, BAVARIA, September 25, 1902.

DR. J. N. CROUSE,

Chairman of the Prosecuting Committee,

Chicago, Ill.

DEAR SIR,—The Huxmannites of Germany have formed a Union, and their presiding officers have informed the courts officially and under oath that the sum of \$2950 raised at my urgent solicitation by the National Association of Dental Faculties at its annual meeting in 1901, and the \$1000 raised by the National Dental Association for the employment of counsel and the purpose of investigating the affairs of the Illinois Board of Dental Examiners, as well as the conduct of certain colleges in issuing degrees illegally, were sums paid over to me for services against Huxmann, and that my sworn testimony in the courts here that Huxmann is not Dean of a reputable college is therefore bought testimony on behalf of the so-called Trust of reputable colleges.

This repetition of a slander, uttered first by Huxmann in Chicago, then by Pitner in a letter to Dr. Crouse of September 1, just before arraignment of Smyser under the evidence elaborated by me in the Finley forgery and the irregular Igney license issue, and later repeated by Huxmann by circulars in Germany, I did not deem worthy of other notice than to report the matter to the State Department for investigation while at Chicago last August (1901) engaged in the elaboration of this material with the Hon. John J. Knickerbocker.

As the State Department has not seen fit to consider the matter further, I am obliged to ask you to certify under oath before a notary public, and have the notary's acknowledgment properly authenticated, for immediate use here in the courts. Your affidavit to embrace:

First. That all moneys contributed by the various bodies were paid over to the investigating committee and none of it to me.

Second. That I was never paid more than entertainment at Milwaukee and Chicago and railroad expenses for trip to the conventions, and never for services rendered the dental profession in my efforts to uncover the frauds perpetrated under the seal of the State of Illinois by certain officials of the Board of Dental Examiners and their punishment for the irregular issue of dental degrees.

Third. That all my expenses for the preparation of my mate-

rial, my expenditures in photographic reproduction, typewriting, and secretary's services before going West and since my departure from there have been borne by me alone, and that I have never been reimbursed for any such expenditures except while the guest of the convention in Milwaukee and Chicago.

Fourth. That the Committee of Investigation, which handles the funds, has never paid over to me one cent for my services, for my outlays of all kinds, including photographic reproductions, preceding the conventions or since my departure from Chicago, nor any other of my expenditures.

All these expenses have been borne solely by myself, as the government of the United States refused to allow any of these expenditures, even the expense for the reports while at work in the revision and compilation of the material at Washington, as the government holds that it would be a precedent out of harmony with the practices of the State Department. Dr. Truman, in the *INTERNATIONAL DENTAL JOURNAL* of December, 1901, stated that the expenditures incurred by me should be refunded by the profession, which no doubt feels itself indebted to me not only for initiating this warfare against fraudulent colleges and the dishonest officials of the State of Illinois, but especially for the pains taken by me to cause the establishment of a new and honorable Board in Illinois, the prosecution of Smyser for his forgeries of the minutes in the Finley case, and the illegal issue of the Igney license, all which are the initiative in a work that has since been accomplished by the Committee of Investigation.

Very respectfully yours,

J. H. WORMAN,

United States Consul-General.

CONSULATE-GENERAL OF THE UNITED STATES OF AMERICA,
KINGDOM OF BAVARIA, CITY OF MUNICH, GERMAN EMPIRE.

I the undersigned, do hereby certify that the foregoing document is a correct copy of the original on file in this Consulate-General, and as such is entitled to full faith and credit.

Witness my hand and the seal of this Consulate-General, this 19th day of December, 1902.

Current News.

AMERICAN SOCIETY OF ORTHODONTISTS.

At the second annual meeting of the American Society of Orthodontists, held in Philadelphia, October 8, 9, and 10, 1902, the following officers were elected:

President, Milton T. Watson, D.D.S., Detroit, Mich.; Vice-President, Lloyd S. Lourie, D.D.S., Chicago, Ill.; Secretary, Anna Hopkins, D.D.S., St. Louis, Mo.

Board of Censors.—Richard Summa, D.D.S., St. Louis, Mo.; H. E. Lindas, D.D.S., Larned, Kan.; F. M. Casto, D.D.S., Columbus, Ohio.

Committee on History and Invention.—E. A. Bogue, M.D., D.D.S., New York, N. Y.; W. J. Brady, D.D.S., Iowa City, Iowa; Lloyd S. Lourie, D.D.S., Chicago, Ill.

ANNA HOPKINS,
Secretary.

ST. LOUIS, MO.

ODONTOGRAPHIC SOCIETY OF CHICAGO.

At the annual meeting of the Odontographic Society of Chicago the following officers were elected for 1903:

President, F. B. Noyes; Vice-President, J. P. Buckley; Secretary, F. H. Zinn; Treasurer, G. N. West.

Board of Directors.—F. E. Roach, L. O. Green, H. A. Drake.

Board of Censors.—D. M. Cattell, W. Girling, D. A. Hare.

The celebration of the fifteenth anniversary of this Society will be held on February 16 and 17, 1903. It will be a memorable meeting in many ways. Papers on live topics are already promised by representative men from all sections of the country. More than one hundred and fifty clinics will be given, on every operation of interest to dentists. The profession is cordially invited to come to Chicago and be entertained at that time. The meeting will not only be profitable, but pleasant.

FRANK H. ZINN,
Secretary.

100 STATE STREET, CHICAGO.

THE International Dental Journal.

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No. 3.

Original Communications.¹

DENTAL BRIDGE AND PIER CONSTRUCTION.²

BY WILLIAM SLOCUM DAVENPORT, D.D.S., PARIS.

IN the science of dental articulation we have established laws which govern the movements and relations of the teeth to the dental arch. The principles of interlocking, counterbalancing, and self-retention of the teeth hold good in the dental arches, even though restored by bridges or other artificial means.

I endeavored to show at the International Dental Congress, also at the Cologne meeting of the American Dental Society of Europe, that a successful bridge depended far more upon proper articulation than on its immediate anchorage. (See *Items of Interest*, July and October, 1901, also report of International Dental Congress, 1900.)

Nearly all failures in bridges can be attributed either to the faulty articulation which allows the bridge to become displaced

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read before The New York Institute of Stomatology, November 6, 1902.

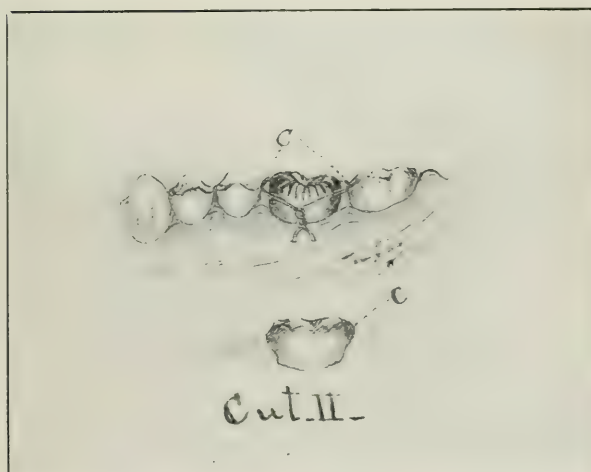
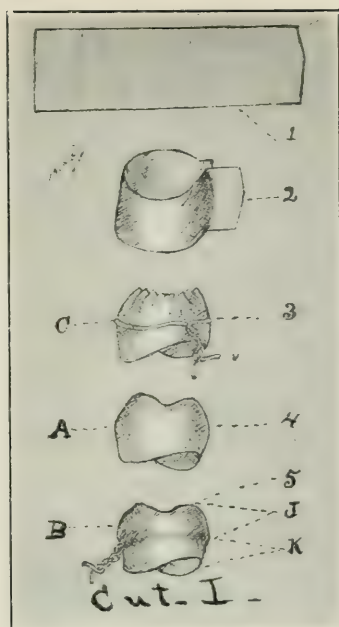
en masse or to the fact that one or more of the anchors loosen, exposing the pier teeth to decay. A bridge properly articulated often continues to perform its functions long after its anchors have loosened and the piers decayed away. Experience and close observation have convinced me that a greater proportion of the bridges would be better anchored to one tooth only, with a compensating articulation, or a pier on which one end of the bridge rests loosely, thus permitting the normal movements of the teeth and allowing for all forces.

“A bridge is not stronger than its weakest part.” Engineering principles must be so applied that the weaker piers will not undergo destruction through unnatural strain and faulty protection. With this idea in view, I present for your consideration over thirty bridge cases from practice which were anchored firmly to but one pier.

I am not trying to condemn multiple anchorages or “classic methods,” but only wish to show some of the faults which have justly prevented bridge-work from occupying the place it should in dentistry.

In the making of caps and bands for bridges I think I have secured, by the use of gold, platinum, and iridium, accurate adjustment, maximum strength, and minimum size. With these three qualities we are able to do away almost entirely with the grinding of the natural teeth, especially in the region of the articulation. By the perfect adaptation and great stability of this cap it can be used as a complete cap or an open cap, whichever may best accommodate itself to the articulation of the teeth and to æsthetic conditions. For convenience I give the following names of the parts used in bridge-anchors, the letters indicate the various applications in the illustrations.

- A. Rigid cap.
- B. Part rigid and part pliable cap.
- C. Contour wire.
- D. Anchor pivot.
- E. Retaining anchor pivot.
- F. Ball pier.
- G. Ball-lock pier.
- H. Socket pier.
- M. Concave pier.
- N. Bridge lug.



RIGID CAP.

In the construction of the rigid cap a plaster model is made from an impression of the tooth taken with modelling compound. A strip of pure platinum plate, thirty-three gauge (Cut I, 1), is fitted to the convexity of the plaster tooth and soldered with pure gold (see Cut I, 2). The edge of this band is slit down in the old way, and burnished and pressed to the tooth by means of a cork. Encircling the platinum cap a platinum contour wire, twenty-six gauge, is fitted in the desired place and all soldered lightly with pure gold (see Cut I, 3). The band with wire attached is verified on the natural tooth; the defects in fitting are corrected by burnishing the soft thin metal perfectly to the tooth. The wire at this stage is useful as a point of contact in pushing the band to its place and in removing the same.

Platinum and iridium gold clasp metal (Williams's preferred) is uniformly melted over the surface of the platinum band and about the wire, which later acts as a guide for the even distribution of the metal over the surface, making a very rigid band with beautiful contour, and at the same time very thin at its edges. (Cut I, 4). With a little experience investment of the band for soldering is not necessary, owing to the fact that the natural tendency of the melted metal is to form itself about the wire, thus preventing its going inside the band and destroying the fit, unless an excessive quantity of the metal is used. When desired, a quick investment for this work is to pack the cap as full as possible with dry asbestos powder and solder at once. For the history and further study of the construction of this cap, see paper by the author published in the *INTERNATIONAL DENTAL JOURNAL* in 1894 (Vol. XV., page 441).

PART RIGID AND PART PLIABLE CAP.

The part rigid and part pliable cap (Cut I, 5) can be accurately adjusted to any tooth without previously destroying its natural contour. This cap is made in the same manner as the rigid cap (Cut I, 4), excepting that it is first fitted to the plaster tooth from bulbous portion to masticating surface. The platinum guide-wire is made to encircle the platinum at the greatest convexity of the tooth. The band is strengthened by melting small pieces of rigid metal between the wire and masti-

eating surface,—the wire acts as a boundary-line in creating the part rigid and part pliable cap. The more rigid or stronger part of the band is about the point between the tooth's convexity and the masticating surface (Cut I, 5, J), while the pliable part of the band (Cut I, 5, K) permits its being passed over the convexity of the tooth and afterwards burnished about the neck of same or into any groove or hole that may have been made as a means of retention.

CONTOUR WIRE FOR DENTAL CONTACT.

Cut II illustrates another use for the contour wire. When a contact is required with the neighboring teeth in bridge-anchorages or regular crowns, proceed as in Cut I, 3, excepting where dental contact is required leave the wire free to be adjusted to the tooth, as in Cut II, C, and tack it with pure gold at the sides.

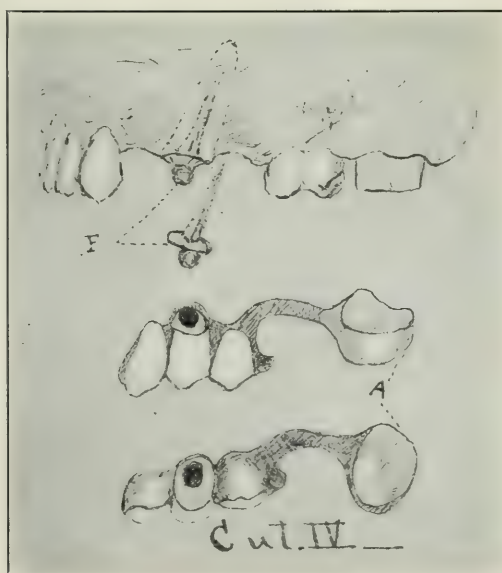
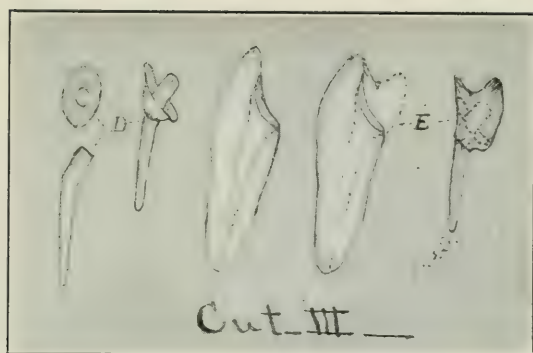
The wire in that position acts as a guide in distributing the melted metal in desired quantity and place, making the dental contact. I might add that the unpolished work for your inspection is as the blow-pipe left it, which shows better the details of construction and the forms obtained by the melted metal.

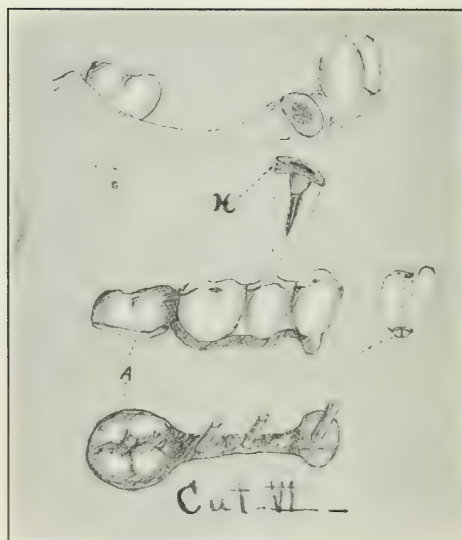
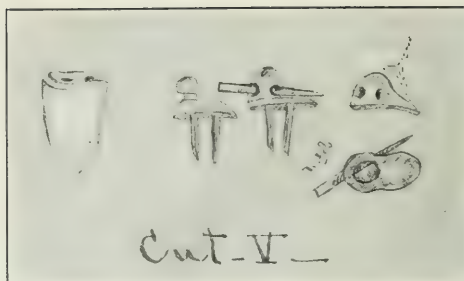
ANCHOR PIVOT.

Cut III, D, shows the construction of an anchor pivot. To conform to the articulation of the teeth it is usually necessary to concave the tooth by grinding at the lingual surface. In the concavity burnish a piece of platinum or gold plate, through this pass a pivot, remove the two, and solder; replace, and take an impression in the same manner as for an ordinary pivot tooth; wax the pivot to the impression, pour the model with soldering plaster, and wax about the cap when the teeth are being placed; build this up to the desired thickness with solder during the process of soldering the bridge. A similar method of using an anchor pivot was published by Dr. J. Leon Williams (*Dental Cosmos*, 1900, page 738).

RETAINING ANCHOR PIVOT.

Cuts III and VII, E, illustrate a retaining anchor pivot. This pivot is made in the same manner as the anchor pivot, excepting that it has an artificial cusp which serves, by its manner of articulation with the opposite teeth, to prevent the tooth to





which it is attached from being driven outward. This cusp is made in the same manner as the articulating surface of the adjoining teeth, details of which will follow.

BALL PIER.

Cut IV, F, shows a diagram of a ball pier, also the manner in which it is applied. A pivot extends up the root with a cap protecting the end. A bridge with a rigid cap is cemented to the molar at the back and extends forward around the neighboring molar by means of a strong iridium platinum bar. The bridge is made with a socket so arranged that it fits loosely over the ball pier, thus forming a ball-and-socket joint which performs all its functions with comparatively little strain to the root. I am indebted to Dr. Hurlbut, of Cannes, for the idea of extending the bridge around a molar.

BALL-LOCK PIER.

Cut V shows the details of the ball-lock pier. The construction is nearly the same as the ball pier, excepting that a key or a screw is made to pass through a hole in the outer cap (or bridge part) and through the groove in the *ball* of the inner cap, thus locking the two caps together.

When movement is required about the ball-lock pier, as in the case where it is used as the second pier to a bridge, the groove in the ball must be made large enough to permit a slight movement; but should the ball-lock pier be used as first ball of a bridge or as the anchor of a crown, the key should be fitted tightly in the ball groove, thus locking the two caps tightly together.

SOCKET PIER.

Cut VI, H, illustrates another form of utilizing a frail root as a pier for one end of a bridge. A gold cap with a socket pivot is cemented to the root. The bridge is cemented to the molar only by means of a short rigid cap which extends to the bulbous portion of the tooth. The other end of the bridge terminates with a ball-like end, which rests loosely into the socket cap pier, forming a ball-and-socket joint.

CONCAVE PIER.

Cut VII, M, is a good illustration of a concave pier. In this case it is a simple concavity made in the retaining anchor pivot.

The convexity in the natural teeth or one ground in the filling answers the same purpose as a rest for the free end of the bridge.

BRIDGE LUG.

Cut VII, N, shows a bridge lug which is a very important feature of single anchored bridges. They are made by fitting a small piece of pure gold plate into the concave pier. To prevent the piece of gold being displaced in soldering, a bit of wire or flat gold is soldered to it in such a way that it is held in the desired place by the investment. The bridges which I present (Cuts VII, VIII, IX, and X) illustrate some of the principles of bridge-anchorage that I wish to bring forward.

Fig. 1 shows the left posterior single extension bridge anchored by means of a rigid cap or ring on molar at one end, with a lug at the other end resting in a concave filling of the bicuspid.

Fig. 2. Left anterior double extension bridge. Anchored in the middle with an anchor pivot entering the canal of canine; back extension rests in the natural concavity in bicuspid.

Fig. 3. Right anterior single extension bridge anchored by means of retaining anchor pivot extending into canal of canine.

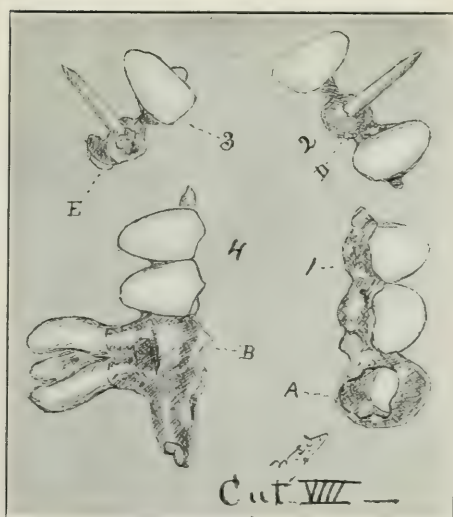
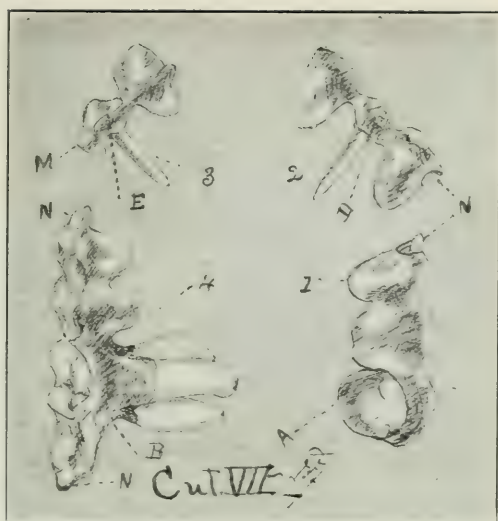
Fig. 4. Right posterior double extension bridge anchored to first molar by means of part rigid and part pliable cap, with a lug of the posterior extension resting in concave filling in wisdom-tooth; anterior extension rests in concave pier which was previously made in retaining anchor pivot of Fig. 3.

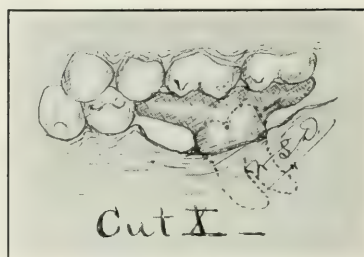
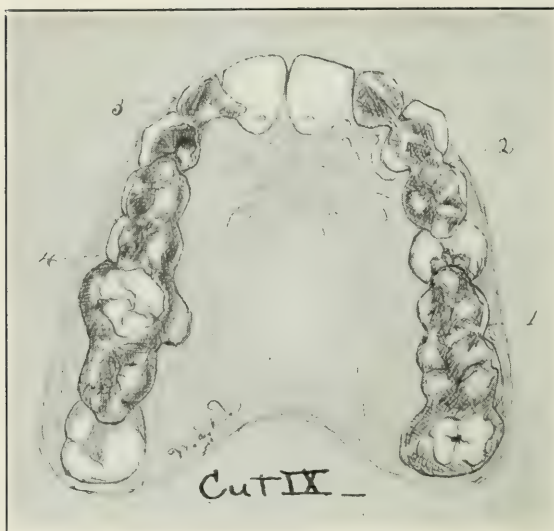
BRIDGE IMPRESSIONS.

An impression of the teeth with the anchors in place is taken with modelling compound slightly softened. To prevent drawing, the compound should not be too tightly forced in about the necks of the teeth and should be made hard in the mouth by means of cold water. Sectional impressions are advisable when accuracy of the gum is required; the anchors are removed from the teeth and fastened into the impression by first cutting a little of the compound away at the side of the anchor and filling in with melted stick wax. The impressions are poured with soldering plaster.

BRIDGE ARTICULATIONS.

The Bonwill articulator is indispensable in bridge-work. It shows minutely where protection must be given to facings, also





how the planes of articulation must be made to give the greatest amount of masticating and retaining functions. The porcelain facings are ground and backed to their points and placed in the desired position on the model, the shape of the articulation surface is made in wax, and afterwards reproduced by burnishing pure gold plate, thirty-three gauge, directly to the surface of the wax.

SETTING BRIDGES.

In retaining bridges the greatest aid is to have sufficient strength and perfect adaptation of the anchor. When this is secured, it matters but little what are the materials used in setting a bridge. I usually use Gilbert's gutta-percha or Eissfelder's No. 7 cement, as the case suggests; although I have had (under favorable conditions) successes from the use of chloropercha, combination of chloropercha and cement, and combination of cement and amalgam.

I have shown in detail my method of making strong and accurately fitting bridge-anchors and also the preservation of piers in general.

My critics have doubted the possible success of single anchor bridges on the ground of lateral pressure and excessive leverage. For the benefit of those, I would refer them to the well-known works on the science of dental articulation.

As I have before stated, the principles that hold good for a single tooth in the arch are the same for a bridge. It becomes only a question of proportion.

Cut X illustrates a double extension bridge anchored to a molar by means of a part rigid and part pliable cap.

The bridge forms a contact with the first bicuspid and articulates with one bicuspid and two molars.

As for the success of this class of bridges, I have a good number which have performed their functions from months up to a few years, and, when made properly, have not given the slightest discomfort or inconvenience.

For further consideration of this subject, I call your attention to the models on exhibition taken from over thirty cases from practice where the bridges were anchored firmly to but one pier.

DENTAL NOTES.

BY WILLIAM ROLLINS, BOSTON, MASS.

4. NOTE VII. ANÆSTHESIA OF THE DENTINE BY ELECTRICITY.

THAT anæsthesia of the dentine could be produced by driving cocaine into it by electricity was proved by McGraw before 1889. Since that time it has been used regularly in my office. In 1896 I had occasion to call attention to these facts in this journal, as the method was being claimed by others. In this paper I mentioned principles on which rheostats for using the street current should be constructed, if the method was to be used with safety and comfort. The principles were discovered as the result of a long experience in making rheostats for dental purposes. I endeavored to show that the ordinary method of placing the resistance on one wire was not safe, as it made it possible for the patient to be exposed to a heavy current. I therefore divided the resistance equally between the two wires. I also stated that in addition to the variable resistance there should be a fixed resistance on each wire, that the maximum current which could reach the variable resistance could be only four milliamperes, when the current was used for dentine anæsthesia.

I also found that to produce least pain the current should be as far as possible a regularly increasing one. As it was difficult at that time to produce such a rheostat in a compact form, which would permit the current to vary from one-one-hundredth of a milliamperè to two milliamperes, which was about the average range required in dentine work, I advocated making the current increase by imperceptible steps, describing revolving rheostats containing two hundred steps that I had designed, and which had been made and offered for sale by Clark & Mills. The instruments had met with little favor, as the importance of a minute division was not understood and they cost more than those with fewer steps on a shunt plan. A more perfect rheostat was designed the same year, and made for me by the same firm in 1897. Since this instrument was placed in my office it has worked well. A number of dentists interested in the subject have been to see it, and approved of the multistep principle, though several, among whom I mention Dr. Price (who saw it in 1900), did not approve

of placing the patient in the direct circuit, preferring the ordinary shunt plant.

I have delayed describing the instrument partly on this account and partly because of investigations on X-light. Now the instrument has been well tested, and I publish this brief description, though I have since invented another rheostat in which there are no steps, the legions of electrons advancing steadily in ever-increasing columns. This later rheostat contains a principle new in medical rheostats, the current increasing steadily through the diminished resistance of selenium when exposed to light. There are countless ways of embodying this principle in a rheostat. I mention it here, as it should be interesting to men who are working on medical rheostats. Later, when time and inclination serve, I shall show drawings of such rheostats.

DESCRIPTION OF MULTISTEP RHEOSTAT.

This rheostat is divided into three separate parts,—first, a maximum current resistance placed high up on the wall; second, a variable multistep resistance; third, a fixed resistance within a few inches of the patient. All three parts are divided into halves, and one-half of the resistance in each is placed on each wire of the 110-volt direct street current. All the resistances are carbon rods made especially for this rheostat by the Dixon Company. The carbon rods in the first and third parts are entirely enclosed in hard-rubber cells. The first and third rheostats have each a fixed resistance of about fifty thousand ohms. The second, or variable multistep resistance contains fourteen hundred and fifty-two carbon rods. The minimum current through all three parts is one-one-hundredth of a milliampère; the maximum, two milliampères. The smallest resistance in the variable part is ninety ohms; the highest is about two million ohms.

These carbons were all separately tested before use and so arranged that each gives an equal increase of current at each step. The resistance of the patient, even if high, need not be taken very seriously, as it is a negligible quantity in comparison. Even if it were possible for the patient to offer a resistance of a hundred thousand ohms, the current would still be over a milliampère. With a low-voltage instrument of ten volts, a similar resistance would mean a current not far from a tenth of a milliampère.

No figures are given of the first and third, or fixed resistances, as their construction should be clear from the text. Four figures are given of the second, or multistep variable resistance, as this is quite complicated. It is contained in a wooden case with glass front, the whole about fifteen and a half feet long. Inside the case are blocks of hard rubber collectively fifteen feet long. These contain four rows of carbon cylinders arranged in pairs, the two rows on one side being connected with one wire of the street main after it has passed through the wall resistance, the two rows on the other side with the other wire also similarly passed through the wall resistance. The maximum current brought to this rheostat, then, is only that which will pass through a resistance of fifty thousand ohms. The tops of the carbon rods are inserted in metal caps with polished tops projecting from the rubber and connected with the moving carriage shown in Fig. 4 by springs. This carriage controls the amount of current that can get through the rheostat. When it is at one end the maximum current is one-one-hundredth of a milliampère. When it is at the other, the current is two milliampères. The movements of the carriage are controlled by a switch within reach of the patient and dentist. By means of this switch the carriage can be moved forward or back either fast or slow. The slow speed cuts out resistance so slowly that it requires twenty minutes of continuous movement of the carriage to increase the current to the maximum. I find that this is as fast as is usually desirable. As the position and speed of the carriage are under the control of the patient and the operator, the operation can be conducted at the speed which they consider best. The carriage is moved by an endless chain which is controlled by two magnetic clutches, shown in Fig. 4, through the foot or chair switch.

Figs. 1, 2, and 3 are so clear they need no particular description, though it may be well to mention that the carriage is held against the two side-rails by springs to insure perfect contact with the carbons. Though the drawings have been made with great care to scale, the principal dimensions are also marked in feet. Any one in want of such a rheostat could probably have it most cheaply made by the Clark & Mills Electrical Company, of Boston, as they have had experience in making me a number of rheostats. The calculation of the required resistance of each carbon is a matter taking time and the testing of a very great number of carbons

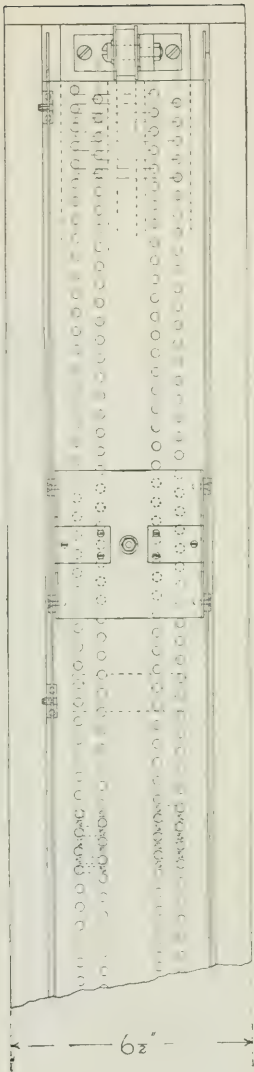


Fig. 1

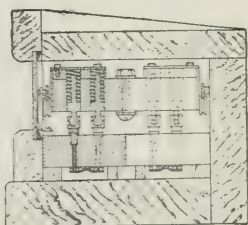


Fig. 2

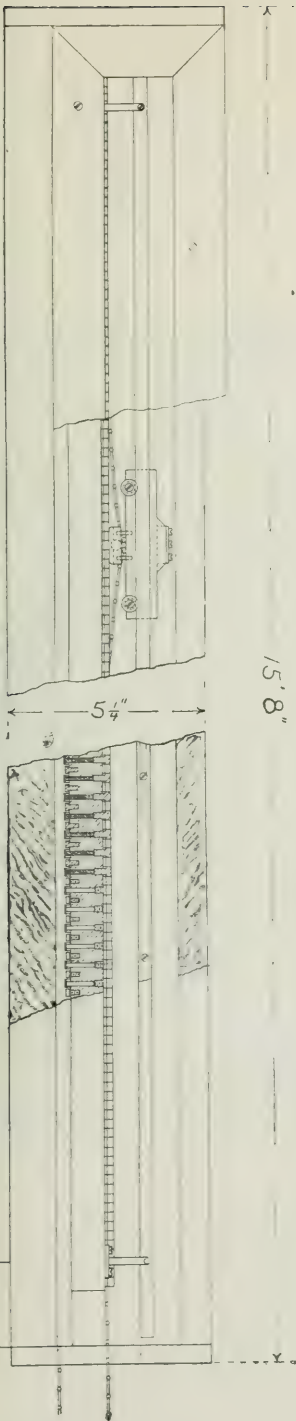
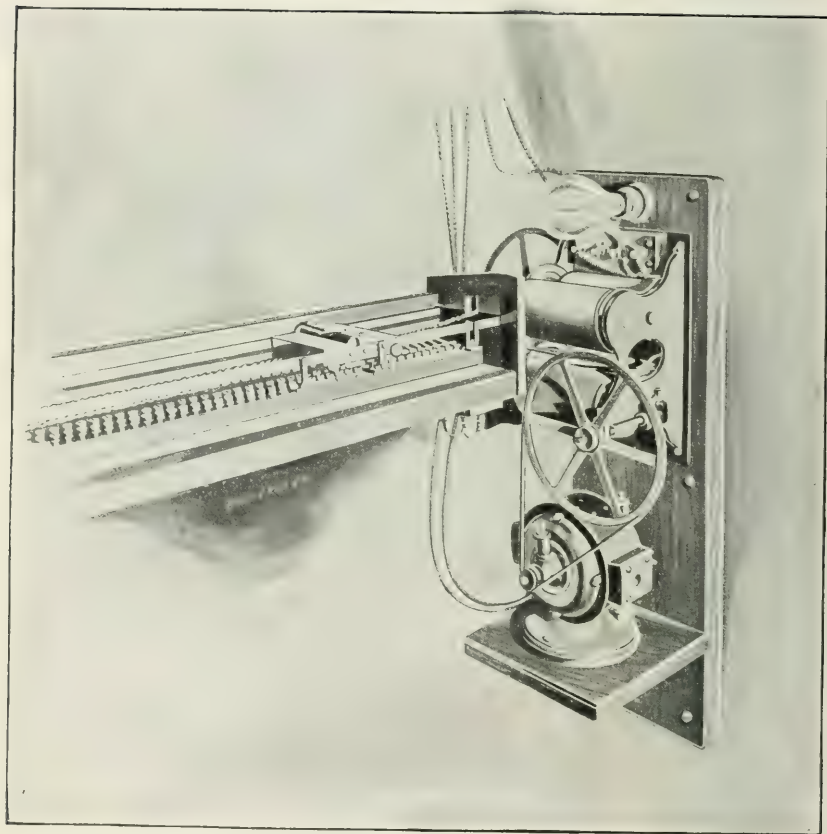


Fig. 3

FIG. 4.



is also a long task. One would at first think that each carbon should have the same resistance as all the others, to make the current increase regularly and gradually, but further thought will show that the matter is not of that order of simplicity. Before closing this paper I desire to again call attention to a method of making dentine insensible by the use of high-voltage currents of minute ampèrage (I spoke of this matter in the paper published in this journal in 1899, and already alluded to in the present paper), and to the method of relieving the pain of an alveolar abscess and stopping its development described in my paper in this journal in 1897. I expect to see these methods reinvented about this time.

CONSERVATISM *VERSUS* RADICALISM IN CERTAIN DENTAL OPERATIONS.¹

BY DR. J. G. PALMER, NEW YORK.

MR. PRESIDENT AND GENTLEMEN,—When your committee invited me to appear before you, it was suggested that some subject which would interest the younger men would also be sure to attract the older ones.

I have chosen to speak on the conservative side as opposed to radical innovations, partly because I am not in sympathy with much of the latter, and partly because so frequently those who advocate more advanced theories take too much for granted, and do not go into those details which are so essential to success in any undertaking. One of the gentlemen, whose theories of "immediate root-filling" I am not in harmony with, has very truthfully said, "We have sometimes failed in accomplishing what another has claimed to be an easy matter, because that one has omitted from his description some detail which he took for granted we were conversant with." I want to give him credit for having been very careful in this respect. It is a fact, however, that very many are not careful to go into the minutiae of their work, taking too much for granted. In this very thing, if those who are advocating new methods—or even describing what to them are old

¹ Read before the Academy of Stomatology, October 28, 1902.

methods—would have more care, I would regard them as being conservative in the sense that conservative means “guarding,” or “protecting.”

I shall speak briefly on what I consider the conservative side of root-filling, of extension for prevention, regarding the devitalization of sound teeth for crowning, and the use of gold in filling children's teeth.

In methods of devitalization of the pulp, and in treatment of abscessed teeth, or devitalized teeth which have never abscessed but have been devitalized for long periods, the difference between conservative and radical methods is most marked.

There are those who earnestly advocate what they term *immediate root-filling*. This, as I understand it, means that a devitalized tooth is opened, cleansed, sterilized, and filled at one sitting. On occasion, some who advocate this method have sought to qualify their statements, but in the main they “stand by their guns.” Certainly this is a very radical method as compared with what we have been taught, both in our schools and in our experience.

The statement has been made by some that they do not hesitate to surgically devitalize,—remove the pulp and fill at once,—but rarely do they describe the “surgical method” in full.

Other than the use of cocaine or eucaine, and gradual approach to the pulp, and then pressure anæsthesia, the general method is the use of arsenic, and there there is a difference,—one introducing the medicine for twenty-four hours and then removing the pulp, and another allowing the medicine to remain a week or more until sloughing has occurred, and then removing the contents of the pulp-chamber. In any case, however, whether immediate devitalization of the pulp, arsenical application for twenty-four hours, or a lingering death, the radicals would fill at once upon removing the pulp. Perhaps in that I am somewhat “radical,” for I sometimes *do* fill on such removal,—no matter how I have destroyed the pulp,—but on occasion I have had serious trouble by so doing. Probably it has been my own fault. I may not have removed the entire contents of the root-canals, etc., but the question under such circumstances comes home to me forcibly. Is this method right? Would it not be wiser to be more conservative, and after removing the pulp—especially when there is profuse hemorrhage—give the wounded parts a chance to heal; let Nature have control for a little while before sealing the canal? In the light of my

own experience, I cannot always feel that it is right to *immediately* fill, even under apparently favorable circumstances.

If not then, how much more do I feel that it is best to be conservative in treatment under any other circumstances than those mentioned, unless where a simple plain fistula presents, with no destruction of the surrounding process. In such cases I do not hesitate to fill at once after injecting through the tooth and out of the fistula. In all other cases, however, it has always seemed to me, from the very nature of things, as well as from my own practical experience at the chair, that the more conservative practice would insure better results in the end and often save the patient much pain.

Dr. F. Milton Smith, of New York, says, in an able article read before The New York Institute of Stomatology, November 1, 1898, on this subject, "Our treatment being almost without exception the SAME in *all* cases of pulpless teeth." He undoubtedly has "the courage of his convictions," but to apply his method to cases where pus is discharging from the tooth, or to those cases where everything is dry but very offensive upon opening, seems so very radical, and has so often at my hands been productive of mischief, that I cannot help feeling that a more conservative practice is the better one.

One of our prominent college professors, who is quite radical in his practice, said he always told his patients that there was a chance of trouble should he fill at once, and, having told them so, he would do as they desired. If they were willing to take the consequences he would fill immediately.

Others less conservative even than he, stating that they expect no trouble, and that none ought to occur except perhaps a little soreness for a day or two, do not give their patients this opportunity to decide, but go on and fill at once. Both classes, however, agree in this one thing: "if trouble ensues, lance the gums freely and all will be well.

My own experience in following this advice has been unfortunate. As stated before, perhaps I have not been as careful as I should have been, perhaps I did not cleanse the canals thoroughly. But *why* do they *sometimes* have trouble? Why does the gum need to be lanced if they have *absolutely* cleansed and sterilized? Is such a radical method, which makes but little provision, if any, for hours of torture should they occur, and which does occasionally

cause such hours, to be preferred to a more conservative practice, which, at the hands of the large mass of operators, certainly reduces the chances of trouble, and has in reality less of torture? The only advantage of the former over the latter seems to me to be in the time saved. Is it wise to endeavor to save time at the very possible risk of pain and failure?

Note that I do *not* say that it is not possible to *frequently* fill immediately and have no trouble, but since the most ardent advocates of this method admit having trouble on occasion, and since we believe that with the more conservative method less trouble will ensue, it has always seemed to your essayist the safer and wiser plan to pursue. Remember, please, that Dr. Smith says his treatment is the *same* in all cases, "*almost without exception.*" He speaks of the method as the "positive" one.

I would not be understood as favoring a *prolonged* treatment, unless in very exceptional cases. I quite agree that as much harm may be done by excessive treatment as by any other practice. I would be understood, however, as favoring that method of conservative treatment which should gradually eliminate poisonous elements, believing that, if the same care in introducing medicines is exercised in this method that some practitioners use in the more radical work, the likelihood of any undue results would be reduced to a minimum.

The question of "extension for prevention" shows in a marked degree the difference between radical and conservative methods.

An advocate of the former method favors extension under any and all circumstances, claiming that it is the *only* certain and sure method of preventing future decay. Those less radical say they do not always extend, but generally defending their practice on the ground that they do not have the small approximal cavities to deal with in the West which some Eastern men claim to have.

It has always seemed to me that in this matter one's good judgment, common sense, and a proper understanding of each case and its surroundings should all be added to a conservative idea, to do for each case what that case demanded, and not make it an iron-clad rule that a cavity must always be extended hither and yon, until there is no possibility of contact, hence no possibility of decay. It by no means always follows, however. "Simply this and nothing more" does not insure against further decay, extension or not.

Referring especially to these small approximal cavities, an able editorial article in the *Items of Interest* for September says, "Dr. Black does not tell us why this recurrence is at the margins of the fillings. Why not elsewhere in that region which is prone to decay, and why not as a distinct new cavity independent of the filled area? Why, indeed, unless it be that the fault was along that margin and due to improper manipulation rather than to improper position." And a little farther on: "If the excursions of food suffice to render the axial angle immune to decay, Dr. Black should give us the scientific explanation of caries along the labial surfaces of the anterior teeth,—the area of all others most thoroughly cleansed with the tooth-brush." I do not feel that I could say anything more emphatic than Dr. Ottolengui has in the paragraphs just quoted.

I do certainly feel that the claims of the most ardent advocates of "extension for prevention" are so extremely radical that the young practitioner may well consider and investigate and experiment before accepting their theories as self-evident facts.

This matter was carefully considered at a meeting of the Second District Dental Society of New York, in Brooklyn, on the evening of March 11, 1901, as reported in the *Items of Interest* for May, 1901. After much discussion pro and con, the consensus of opinion was strongly against indiscriminate extension, especially below the gingival margins. While it is yet an open question, it is quite evident that the advocates of "extension for prevention" have used all their ammunition, for they dogmatically reaffirm their position, but adduce no new arguments in favor thereof.

In crown- and bridge-work the question of whether sound teeth, or teeth with only small cavities, should be devitalized or not, when intended to be used as piers, has been frequently discussed of late. The radical says that he does not hesitate under any and all circumstances to devitalize. He claims that the tooth will be much more satisfactory. He states that the pulp will die in the tooth any way after crowning, and that he is only anticipating and thereby saving trouble to all concerned. Perhaps he believes that "dead men tell no tales."

Having in mind cases which I have seen from the hands of workmen skilled in "gold and silver," who have followed this idea and devitalized sound teeth and crowned at once, I am firm in my conviction that the combination of circumstances was too

much. I have seen a number of such cases where abscesses have formed, whether because immediately filled or not does not concern us now, but, had the teeth not been devitalized, had their life forces been conserved, the crowns so adapted that there would have been no irritation, my impression is that the results would have been better, that the teeth would have given no trouble, and the patients would have been saved the pain and annoyance of the abscesses plus the subsequent necessary removal of crowns or bridges to gain access to the pulp-chamber. That this subject admits of much discussion is true. I have seen cases where the action of the cement upon the tooth has been very irritating and resulted ultimately in the loss of the pulp. I have always believed, however, that this was due to some defect in preparing the cement, or in the cement itself. Those cements which harden thoroughly throughout do not seem to affect the teeth so readily, and where a lining of gutta-percha can be supervened it would seem that the tooth could be readily preserved.

As crown- and bridge-work is being more and more practised, this question seems to me to be one in which the conservation of the teeth should be most earnestly considered. My own antipathy to the ruthless destruction of the pulp in strong healthy teeth is so great that I cannot give with any degree of acquiescence the theory or practice of devitalizing such teeth merely to make piers, and I fail to be convinced that a sound tooth, even under crowning, must necessarily die.

"Should children's teeth be filled with gold?" was Dr. Ottolengui's theme before the New Jersey Dental Society at Asbury Park this summer, and, despite adverse criticism from many quarters, he championed that idea for all there was in him. It seemed quite a departure from our old-fogy, conservative ideas to say that gold was the best thing to use in cavities for children. All teaching and experience would seem to be opposed to this idea. Even the use of amalgam was opposed, and, if I remember aright, gutta-percha was inveighed against by the essayist.

My own experience and the experience and practice of many practitioners whom I know is strongly in favor of the use of both plastics and gutta-percha.

Consider the tender years, the extremely sensitive teeth, the time necessary, under most favorable circumstances, to insert a gold filling, and the care necessary to do so effectually, is it at all

likely that such work in the hands of the average operator will succeed?

Often the child of even twelve or thirteen years comes to us with cavities so perilously near the pulp that any attempt to remove much, if any, of the floor of the cavity would cause trouble. Even pressure cannot be endured. Assuredly a soft material which can gently be introduced and which *will protect*, is to be preferred.

In a paper read before the Southern Dental Society of New Jersey, April 16, 1902 (*Items of Interest*, August, 1902), Dr. H. S. Sutphen says we should "first of all give 'mouth ease,' and secondly 'tooth preservation,' the second depending upon the first." How very apt this is, and how well it applies to our work for the little ones! They come to us so nervous and apprehensive of pain that to properly prepare and fill the cavities with gold would mean such a shock to the nervous system, such a dread of the dentist, that they would remember it for years. I doubt if they would ever forget it.

Is it wise to subject them to this exceedingly radical method when care and patience will help them tide over the period of such intense sensitiveness? Even the pressure of the pellet of cotton causes pain. Yet how often by care and attention we have been able to so fill such teeth with some of the various plastics at our command that in the course of time they have become stronger and healthier and able to receive the metal filling and do good service.

Do we not owe these young patients more attention, more care, than we could possibly give by subjecting them to the ordeal of a gold filling, be it ever so deftly and expeditiously done?

"Prove all things; hold fast that which is good," says Holy Writ. In all such discussions we earnestly desire to get at that which is good, and having done so, to hold on to it.

I have not offered any new arguments to-night, but if the way in which the old ones have been presented shall cause a discussion that will bring out some new ideas, or emphasize old ones, I shall feel that my effort has not been without avail.

Reports of Society Meetings.

THE NEW YORK INSTITUTE OF STOMATOLOGY.

A REGULAR meeting of the Institute was held on Thursday evening, November 6, at the office of Dr. J. Morgan Howe, No. 12 West Forty-sixth Street, New York, the President, Dr. Howe, in the chair.

The minutes of the last meeting were read and approved.

COMMUNICATIONS ON THEORY AND PRACTICE.

Dr. Eames, of Boston, presented an apparatus for removing the débris from instruments with one hand during operations. It consisted of a cup, at the bottom of which was placed a rubber mat, the cup to be filled with some antiseptic solution.

Dr. T. Adams Bishop presented a tooth (second bicuspid) which he had recently extracted and which showed a completely calcified pulp in position.

Dr. F. Milton Smith presented a method for quickly repairing a bridge from which a facing has been broken. The pins in the bridge are left in position. A cross-pin plate tooth is selected, the pins ground away, and a dovetail cut in the porcelain with a thin stone. The tooth is set with cement. He said that it made a good temporary repair.

Dr. C. O. Kimball called the attention of the members of the Institute to Dr. S. A. Hopkins's book, published by Appleton as one of their health primers. He said that the book ought to be in the hands not only of every dentist, but of every mother and all who have the training of children. Its especial value was contained in the instructions given in two or three chapters as to how the teeth of children may be influenced by proper attention to food and daily care. Dr. Kimball believes that it is a work of very great value.

A paper entitled "Dental Bridge and Pier Construction," by Dr. William Slocum Davenport, of Paris, was read by Dr. E. A. Bogue.

(For Dr. Davenport's paper, see page 161.)

Dr. E. A. Bogue also mentioned the following details of Dr. W. S. Davenport's methods:

Impressions must be taken and the models studied from the *lingual* side, as well as from the buccal, before one can be sure what sort of apparatus can be made.

The tendency is for teeth that are bridged to spread apart, hence it is important that the articulation of the natural teeth should hold the abutments in place, if it can be done.

This is *the* important thing to consider before deciding what to construct (it is generally the last thing considered, if it be considered at all, hence the frequent failures).

Asbestos powder, wet up with alcohol, is used to set the parts into solder, as much time is saved by this process.

If teeth are to be used in a bridge, grind them into place before backing; grind all occlusal notches, or cut cusps, or imitation cavities, and then line with thin pure gold.

Invest on the plaster and sand model, and when set remove wax with hot water. Solder all of it at once, and the solder will flow to the bottom of the plaster mould (platinum will not flow there), because the teeth having been backed to the edges, the solder will flow from edge to edge and leave a smooth surface requiring little filing or polishing.

Dr. E. H. Babcock asked whether it was advisable to have pieces of bridge-work rest on the gum or not, also whether it was better to devitalize teeth that were to be used as piers.

Dr. Bogue replied that one of the reasons Dr. Davenport had worked out this system was to preserve the pulp alive. One of the specimens passed around was a bridge resting on the gum for a considerable surface, showing that Dr. Davenport regarded this advisable in some cases.

Dr. S. E. Davenport highly commended the essayist for the originality of methods described in the paper and proved by the diagrams and models exhibited. He said that while the Institute was disposed to occupy a very conservative position concerning ordinary bridge-work, it could but receive with favor such an exhibition as had just been made of Dr. W. S. Davenport's methods, in which bridge-work was but an incident, used not only to increase the masticating surface, but to hold the natural teeth in the new positions into which they had been moved, many models showing also that the bite had been opened to the great improvement of occlusion.

Dr. L. C. Leroy said that there was much to be commended in the paper; but there were some undesirable features, such as the molar with the open masticating surface and the ball-and-socket pier which has been discarded. In one case Dr. Davenport had combined regulating with the bridge-work.

Dr. J. B. Locherty remarked that we were greatly indebted to Dr. Davenport for his paper, because the models described and illustrated were those of cases which had been in practical operation for several years and had satisfactorily stood the test of time.

Dr. L. Ashley Faught, of Philadelphia, expressed his interest in the paper and was sure that a closer study of the models would be of value. He would have doubted the future of some of the bridges if the question of occlusion had not received such careful attention. Dr. Faught, after experimenting with the various kinds of modelling compounds, has settled down to that made by Ash & Sons for taking his impressions, and finds that if properly used it will give very accurate results.

Dr. F. Milton Smith said he was delighted with the paper and illustrations. He believed in bridge-work and thought that a bridge carefully and judiciously made was one of the best things we could do for our patients. That bridge-work done with the idea of correcting articulating surfaces and moving into position certain teeth that were out of place was very valuable. Speaking of burnishing the crown around the neck of the tooth, Dr. Smith said that he had not been able to do it to his satisfaction. He has been extremely conservative about devitalizing teeth to be used as piers, but at times has wished that he had been a little more radical. His plan for treating teeth with bell-shaped crowns was to make a cap that did not extend down to the gum. Although this does not make quite so firm a support, it gives him a chance to examine the tooth under the cap.

Dr. E. A. Bogue said that he happened to know that Dr. Davenport had in mind, when he spoke of burnishing the crown around the necks of teeth, the badly exposed teeth of an elderly person where the margin of the crown could be burnished in around the three roots. Dr. Bogue said that he was adverse to bridge-work which did not allow for the normal mobility of the teeth, but he found that in the bridges devised by Dr. William Davenport not only this had been accomplished, but, as Dr. S. E. Davenport has mentioned, the idea of regulating deformed conditions also. There-

fore he had urged Dr. William Davenport to bring the subject before the Institute.

Dr. F. Milton Smith said that in taking impressions for crowns with modelling compound it was his habit to soft solder a band of copper a little larger than the tooth and to use this as a cup. In this way he was able to get perfect adaptation.

Dr. Clinton Wright Strang, of Bridgeport, Connecticut, was called upon to speak of his trip to the International Dental Federation, at Stockholm, Sweden. He stated that he had enjoyed his trip very much, and expressed his pleasure in meeting many of the American dentists who are practising abroad.

Dr. E. A. Bogue was then asked to present his report as the Institute's delegate to the meeting at Stockholm.

REPORT OF DR. BOGUE AS A DELEGATE TO THE MEETING AT STOCKHOLM, SWEDEN.

MR. PRESIDENT.—Agreeably to the request of your executive committee, I present you this evening an incomplete report of my doings as your delegate to the International Dental Federation, held in Stockholm last August. Lest it should not be perfectly known by all the gentlemen present what the International Federation is, I will go back two years to August, 1900, and recall the International Dental Congress held in Paris on the occasion of the great exposition there. This congress was composed of about twelve hundred members; it followed upon the heels of the International Medical Congress, which contained a dental and oral section, at which something like one hundred and fifty members were present. The organizing qualities of the men who conducted the Dental Congress it is not necessary to enlarge upon, as the twelve hundred members did that sufficiently. It was thought upon the conclusion of this congress that, in view of its success, an effort might at some future time be made to hold another; and in order that this other might be regarded as a lineal descendant, it was voted by the officers and members present at the last session of the congress, held on August 14, 1900, that a body should be organized, to be called the "Fédération Dentaire Internationale," and that this name should be in French, to be abbreviated by the initials F. D. I., for short; that this body should be composed of all the national committees and the officers of the closing congress; that the president of the congress, M. Godon, and the secretary-general,

M. Sauvez, should continue to act as the president and secretary of the federation; that it should be represented by an executive council composed of nine members, who should be nominated by the then present members of the Third International Dental Congress then assembled, and that the powers of this committee should expire at the opening of the Fourth International Dental Congress, which it is charged to organize at such time and place as might to it appear best in the future. This executive council at its first session proceeded to organize an International Commission of Education, of which Dr. Brophy, of Chicago, was made chairman.

The second session of the F. D. I. was held in London, England, beginning on August 4, 1901, and continuing in Cambridge on August 7, 1901, and was marked by the formation of an International Commission of Public Dental Hygiene. Sir Michael Foster acted as temporary president during the Cambridge meeting. The third session was the one to which you sent your two delegates, and it was held in the city of Stockholm, Sweden, beginning August 13, 1902, and continued three days.

An invitation was sent by the National Dental Association of America to the executive council of the F. D. I., requesting that the Fourth International Dental Congress should be held in 1904, and that the place of meeting should be the city of St. Louis, and the time the month of August. A similar invitation was sent to the American Dental Society of Europe, and this invitation was accepted by both bodies.

A resolution was passed by the International Commission of Education recommending, in substance, that the preliminary examination required of the student wishing to commence the study of dental surgery should be the same as that required for the student wishing to commence the study of medicine, in all countries where educational matters are under the control of the general government; and in those countries where educational matters are not under control of the general government, that the examinations required for a dental student should be the equivalent of those required for the medical student of the countries just mentioned, and that such equivalency should be decided upon by the minister of public instruction.

It was a good deal of a triumph and speaks exceedingly well for the temper and earnestness of the delegates assembled in the Commission of Education of the F. D. I. that they should have

been able, after nearly three days of discussion, to agree upon a recommendation of this kind, for it shows a greater harmony among the teaching bodies than could at first sight have been expected, and a greater degree of unity in the requirements that will henceforward be expected from all those wishing to begin the study of our specialty.

PERSONAL EXPERIENCES.

One or two of our members having expressed a wish that I would give my own personal experiences, I shall take pleasure in doing so up to certain point.

There were seven of us on the Steamship "Columbia," of whom Dr. Strang and myself were two. On the way over Dr. Strang grew visibly, because, as he said, every dinner was a banquet, or at least it was the equivalent of many a banquet for which he had paid five dollars, and he was not sea-sick. I also was anxious that the steamer should not get the better of me, but was compelled to forego dinner one day at least.

After a pleasant trip of one week, we reached Hamburg on Friday, going up to the dock at the same moment with the steamer "Blucher," having on board Drs. Guilford and Holly Smith. The trip around Hamburg was a most delightful one, as we found the residence portion of the city was situated along the borders of the river, running out for about four miles, so that on each side of this water the beautiful gardens with their villas in each were sloping down nearly to the water's edge, giving just room for a street or road to pass between the houses and the water. The architecture as well as the horticultural part were both very attractive.

Dr. Griswold issued an invitation to us all to be his guests at dinner and the circus, but your other delegate, Dr. Strang, and myself concluded that we would flock alone, and as I wanted him to have a "circus," I took him to five or six different places of amusement in the course of the evening. His face grew visibly long before we were through, and he asked, with a tone of anxiety in his voice, what his share of the total expense might be, as he wished to liquidate this debt if he had money enough, remarking that he must keep enough to take him home, and that his letter of credit was limited. After long and elaborate calculation I found that he owed me about nineteen cents in our money, which he paid up with a sigh of relief, for I think he fancied it must have been about nineteen dollars.

From Hamburg we all went together to Copenhagen, where we stayed one day, being driven around the city to see the sights that it contains, foremost among which may be counted its commercial advantages, its fine location, and the Thorwaldsen Museum of Sculpture, and the other royal and civic museums and galleries. Our lunch was taken at the Tivoli Gardens, where there is an assemblage of restaurants, theatres, concert halls, and places of out-door sports that I have not seen equalled elsewhere. At this city we joined the Swedish Dental Society, the members of which enjoyed on this occasion half-fare rates over all the railroads of Sweden. At seven o'clock we left Copenhagen for Malmö, which we reached after about two hours and a half ocean travelling. Our numbers had increased by this time to such an extent that we entirely filled one sleeping-coach. In the morning our first experience was getting breakfast at a station about an hour and a half from Stockholm. We were told to go and help ourselves at a bountifully spread table, taking what we pleased and sitting down if we had a chance. The fare was good, and when we came to pay up, every one paid the same,—one krona, equal to about twenty-six and a half cents of our money,—and upon paying we received a ticket that allowed us to go out—admission free. About nine o'clock we reached Stockholm and our head-quarters, those of us who could get rooms at the Grand Hotel, which was headquarters for the meetings; those who could not, went elsewhere, and your two delegates were placed in a "pension," or boarding-house, which was truly Swedish, very pretty, neat, and clean. After we had been there about a week we discovered that the price of board was six kroners a day, and the gentleman who took us there had been receiving ten with a smile that was childlike and bland; but as he was strongly recommended to us from Chicago, we did not know what to say, so we said it. Breakfast was over in this house when we arrived, and we were politely requested to wait until lunch for our coffee; but we, being willing to try our wings in a strange country, flew out and had coffee, bread and butter, boiled eggs, ham, tongue, sliced cucumbers, with sugar and vinegar, and pickled salmon. However we got all these things Dr. Strang did not know. He thinks it was due to my limited knowledge of Swedish. I knew, on the contrary, that it was the regular breakfast, such as was served at the station before we arrived in Stockholm, and three or four words only brought the whole outfit.

Stockholm is wonderfully clean, bright, and cold. Built mainly of light cream-colored stone, almost white, on eight or ten islands connected by bridges, yet in spots so wide apart that large passenger steamers can lie at their wharves right in the city, and freight-boats only a little way from the centre of town. Passage around the city from place to place is easy,—on foot, in carriages, or in tram-cars, as one will. Hills lay at one side, and quite a table-land on top of the hills, so that a large lake of fresh water is always there, overflowing into the streams and estuaries below. The city is so far from the sea that the tide is not felt, so all this water has the appearance of large rivers or lakes that do not leave an unpleasant mark on their banks.

Our head-quarters were at the Grand Hotel, an enormous and very beautiful building. In the centre of this building is a room that serves for large gatherings, political or social, over many of which the king himself presides, I am told. The king, being a stockholder in the hotel, it seems, was privileged to arrange his rooms so that banquets, balls, public gatherings, with committee-rooms, cloak-rooms, and all the accessories for a convenient and easy holding of assemblages for business or pleasure may be had at short notice. I don't remember ever seeing any more convenient place in which to hold meetings of from one hundred to four hundred persons.

We reached Stockholm on Tuesday morning, got ourselves settled, and attended a meeting of the American Dental Society of Europe in the afternoon. A few of us dined with Dr. Jenkins at the Grand Hotel in the evening, after which we attended a ball given by the Swedish Dental Society and followed by a supper in the rooms before mentioned.

On Wednesday we listened to a most interesting paper from our fellow-member, Dr. W. E. Royce, of Tunbridge Wells. President of the American Dental Society of Europe. (An abstract of Dr. Royce's paper follows this report.) At noon the American Dental Society of Europe invited all its members and guests to lunch at the restaurant in the Grand Opera-House, and in the evening the President and Mrs. Royce gave a reception at the Grand Hotel, followed by a dance and supper.

On Thursday the regular sessions of the American Dental Society of Europe were continued, at which a number of interesting communications were read, and again a lunch offered to all the visitors, and in the evening the annual banquet of the Society.

On Friday the reception of the members of the F. D. I. took place, with speeches from Dr. Christensen, President of the Swedish Society, and Dr. Forberg, our fellow-member, at the Medico-Chirurgical Institute. In the afternoon of Friday sessions were taking place of the F. D. I. and of the American Dental Society simultaneously, these meetings being about half a mile apart; your delegates endeavored to attend both of them, with the usual results, so that when half-past seven P.M. arrived we were quite ready to attend the banquet which was given at the Grand Hotel.

On Saturday there were clinics by members of the Swedish Dental Society and the F. D. I., and our fellow-member, Dr. Brophy, performed an interesting operation for closure of a cleft palate, the patient being an infant of about five months. In the afternoon of Saturday we were invited on board one of those pretty little steamers and taken down to Saltsjöbaden for dinner at the Hasselbachen restaurant. This is the most fashionable bath-resort in Sweden and is about nine English miles from the city; the trip by boat was through the most beautiful scenery and took us between two and three hours. Once arrived at Hasselbachen, we were given a genuine Swedish dinner; as this is a little peculiar, I will try to describe it. On the piazza adjoining the dining-room were numerous sideboards with piles of plates, knives and forks upon them, pickle-jars, and three or four bottles with something strong in them; some of it was schnapps; another bottle was Swedish punch, still stronger, if possible; another, I am told, was gin,—this is mere hearsay. Cold sliced tongue, sausages, ham sandwiches, bread of various kinds, pickles of various kinds—pickled salmon, pickled eel, caviar, sardines, sardellen, sliced cucumbers, Kiehler sprats, perhaps other things—were in abundant quantities on this sideboard. Every one was expected to help himself to the plates and knives if he wished, and whatever eatables he chose,—drinkables as well. Then he sauntered about the piazza, conversing with such friends as he found or giving his most earnest attention to his eating, as pleased him best. This exercise continued perhaps for ten or twelve minutes; when the signal was given, all hands put their plates on the sideboard and repaired to the dining-room adjoining, where a regular *table d'hôte* dinner of five or six courses was duly served, with wine or beer at discretion. At a certain stage in these proceedings, fortunately for one

of your delegates, he got out, reached the train, and made for home, where he arrived elated beyond the power of expression, for the rain began to pour in torrents just as he reached his own quarters.

The next morning was Sunday, which was duly observed by our going on board one or two of those boats before spoken of, getting what breakfast we pleased. Swedish fashion, on our way to the Castle of Gripsholm, which we reached about eleven A.M. This is one of the interesting old royal castles of Sweden, containing, they say, the largest and finest collection of portraits in Europe. We passed two hours or more exploring this castle, and on our return to the boat found tables set all around the decks, with awnings overhead, and on our way home again dinner was served at these tables, to the accompaniment of a splendid male quartette singing the songs of Sweden from the time we left Gripsholm until we again reached Stockholm. We landed at a quay a little way from the Grand Hotel, and were taken to see a swimming-match, the culmination of which involved the men going to the fourth story and plunging from there into the water; to our great astonishment, after they had successfully risen to the surface and swam away, about fifteen or twenty girls, from twelve to twenty years of age, followed their example and plunged in from the fourth story. Strange to say, they seemed to enjoy their ducking, and the muscle displayed on both sides of the house was something remarkable and beautiful.

On Monday the F. D. I. continued its labors all day, and on this day we went home to dinner; but on Tuesday, after working still further, it was agreed to have a general dinner at the Grand Hotel, in which about seventy-five joined. Our friend Dr. Barrett rather made the speech of the evening and covered himself with glory as with a garment; but Dr. Guilford lost the occasion of his life. He said that he had seen many of his former friends and pupils practising in Europe, and he was glad to see them again under present circumstances; he said when they left America and went to Europe to live their instructors sent them over like Joseph in Egypt,—he did not specify which of them he meant, and we have been unable to find which ever since. He also said that their instructors had some fears when they came over here to be under the power of kings and emperors, but that they seemed to get along somehow. Dr. Guilford failed entirely to add the corol-

lary of this statement,—viz., that after a time they reached the point of having those kings and emperors under their power, temporarily at least.

The next day, Wednesday, the resolutions mentioned in the early part of the evening, recommendatory of the qualifications for a dental student, were passed, and at one o'clock all the members gathered on the invitation of Dr. Brophy to take a farewell lunch with him at the Grand Hotel, and a half-hour after its conclusion Drs. Brophy, Barrett, Smith and his wife, Gurlee, and Gordon White, under the guidance of Dr. Andridge, started for Russia with one or two other voyagers; I know they survived this tour, the travelling in which was mostly done at night, sight-seeing by daylight, for I saw them later on in Berlin. Dr. Strang and myself tarried in beautiful Stockholm until Friday morning, employing our time in visiting the museums more than we had been able to up to then. On Friday morning we were escorted to a steamer, introduced to the captain, and recommended as distinguished guests to his kind attentions, and we started for a two and one-half days' trip down the Götha Canal to Gothenburg. This canal takes us to the Baltic Sea through a most picturesque journey, partly by lake, partly by river, passing near the Castle of Gripsholm, which we saw on the preceding Sunday; and then for an hour or so we are practically out of sight of land, until at Mem we are at the beginning of the Götha Canal and enter the first of the seventy-four locks that have to be passed between there and Gothenburg. At a good portion of this trip we seemed to be sailing through somebody's back-yard, for the canal is not much broader than the boat on which we are riding. At other points it broadens out into a river or a lake, as the case may be, and in one instance, Lake Nämern, we are once more for a few moments out of sight of land. The locks were so numerous that time and again we were able to get off and walk for an hour or two on shore, and catching the boat when she sailed in one of these locks, just in time for dinner. This dinner, by the way, is like the other Swedish dinner heretofore described. The wonder is that we foreigners lived to tell the tale, but the truth is we grew to like it and would very much like to go again.

The weather was cold and clear; a heavy overcoat was very acceptable. We were favored with moonlight nights and pleasant weather until we reached Copenhagen, which was accomplished

on Sunday evening. The place to take supper on Sunday, or on any day, in Copenhagen is at an enormous garden where a splendid orchestra plays during supper- or dinner-time, and when it rains, as it did that evening, they go in-doors to a hall capable of holding at least fifteen hundred people, where we might eat our supper in peace to the accompaniment of music and stay there as late as we choose.

From Copenhagen we passed back by train to Helsenburg, and there were ferried across to Denmark, the train being carried over the few minutes of sea voyage. We landed in Helsenburg, where it is said the tomb of Hamlet is to be found; our English cousins, and some others, make the pilgrimage to this tomb in serious good faith, regardless of whether Hamlet was a creature of Shakespeare's imagination or not. That evening we were landed once more in Copenhagen, and Dr. Kjaer, the dentist to the king, and sometimes to the present queen of England, took charge of us, taking us to his villa five or six miles out of town, overlooking the harbor, to dinner and for an evening's entertainment and supper. Later on we were taken back to that wonderful Tivoli before spoken of, where for an hour we heard most ravishing music exquisitely played.

From Copenhagen we went as directly as we could to Berlin, arriving just as the decorations for our reception and that of the king of Italy the next morning were being completed. We were received after some trouble in a little hotel, Unter den Linden, and the king of Italy and emperor of Germany, with a whole lot of gayly dressed troops passed by next morning bright and early. It was a pretty gay city for two days, and it was then and there that we discovered our Russian travellers on their way home. Shortly after noon we called on our friend and fellow-member Dr. Sylvester, dentist to the emperor, associated with whom is Dr. Watson, who also takes care of the rest of the imperial family. We were seized, put into a fine carriage, and driven all over Berlin. It seemed to us, the whole afternoon; taken back to the hotel to wash and dress, and were told that the carriage would be in front of the house for us by the time we were ready for it; so we dressed and were taken to dinner, where we found a rather gay assemblage, ladies and gentlemen, and were joined later on by another friend and formerly a member, Dr. Young, of Leipsic. What time we got home I will never tell, but next morning at eight the same

carriage was ready to take us away down through beautiful woods to Dr. Sylvester's yacht, which was ordered to receive us and take us up and down until we reached Potsdam, where the emperor and the king of Italy would be passing the night and from which they came in their steam launch, saluting us as they went by. We reached our quarters in safety, much edified and delighted, and yet, strange to say, my friend Dr. Strang at this point deserted and went off to Paris, passing by the way of Brussels; what for I never asked; from that on he will have to speak for himself.

For myself, after taking these two or three post-graduate courses from those who control the kings, I went to Dresden, where I was treated once more with royal honors by our friend and fellow-member Dr. Jenkins. Dr. Jenkins allowed me to stand by his chair and learn what I could during five days, and all the time that he was not answering my numerous questions he was showing me the beautiful places in and about Dresden, or treating me to fine dinners, or behaving in a way that I despaired of ever being able to reciprocate in any way.

From this point on I leave your imaginations to run riot as they will. *Ex uno disce omnes.*

ABSTRACT OF DR. W. E. ROYCE'S ADDRESS ON THE PHYSIOLOGICAL
POSSIBILITIES AND LIMITATIONS IN EDUCATION.

Dr. Royce, in the first place, defined education and held that instruction consists in training the organs of special sense. Certain portions of the brain receive and retain facts. Facts thus stored constitute knowledge.

Knowledge should not be looked upon as an end, but as a means to an end.

Knowledge has had to do with the afferent nerves. Education especially deals with the efferent nerves and the organs of expression, for to educate is to draw out the mind.

A mind must be formed before it can be drawn out; knowledge is therefore a prerequisite to education. As the result of instruction is knowledge, so the result of education is skill.

Man alone possesses a creative mind, capable of almost infinite culture.

The brain is said to be the organ of the mind, associated with it are the sensory and motor nerves, the organs of special sense, and the organs of expression.

It is the function of the sensory areas of the brain to receive and respond to the sensations derived from the organs of special sense.

The motor area has furnished a most interesting field for experimentation, and so thoroughly is this region now known that the physiologist is able to cause muscular action in any portion of the body by applying the electrode to the corresponding motor area in the opposite hemisphere of the brain.

Professor Huxley has said that "man alone possesses the marvellous endowment of intelligible and rational speech, whereby he has slowly accumulated and organized the experience which is almost wholly lost with the cessation of every individual life in other animals."

Of the hand is said, "in consequence of the mobility of the thumb, it is what is termed opposable; its extremity can, with ease, be brought into contact with the extremities of any of the fingers; a property upon which the possibility of carrying into effect the conceptions of the mind so largely depends."

In 1891 Waldeyer advanced the theory of the neurone.

This theory, briefly stated, is that the nervous system is made up of innumerable independent units. Each unit consists of a nerve-cell and all its processes. This unit is the neurone, and these neurones are in contiguity but not in continuity; that there is interlacing of the processes but no actual nerve connection.

Both those who uphold and those that oppose the theory of the neurone agree that in early life the neurones are entirely independent of one another.

Experiments have also proved that in early youth use hastens development, want of use causes atrophy. This explains largely the question of so-called muscular education.

It is supposed that the lost time observed in the passage of a nervous impulse is due to a block at each synapse (the term synapse is applied to the interlacing of the processes or dendrons or branches of two or more nerve-cells).

The synapses act like valves preventing impulses passing in the reverse direction.

Reaction time is the name given to the time lost in the block at these synapses and it varies with different individuals and in the same individual according to his physiological condition.

In old age the reaction time becomes slow.

Practice and attention tend, up to a certain point, to diminish the time.

It is the difference in reaction time which has given rise among astronomers to the term "personal equation."

Turning to experiments in music, it was found that the practised player could strike from twelve hundred to nineteen hundred notes per minute correctly, or from twenty to nearly thirty-two per second.

What part of this education consists in shortening the refractory period, what in shortening the reaction time, or the establishing lines of least resistance in the nervous system, and what in the acquired ability of concentrating the energy of many nerve-cells upon a single object, it is impossible at present to say. It is probably a combination of all.

Physiologists have, thus far, failed to define clearly between brain impulses and spinal reflex. In man, therefore, every motion which is directly associated to consciousness must be attributed to the brain.

With these facts in mind let us return to the illustration of the pianist.

The student, at first, slowly studies out one note at a time and seeks for the key indicated by that note. After vigorous mental effort the impression caused by the sight of the note results in a musical sound.

Between the motor area of the brain and the finger there are hundreds of ways where the impulse may go astray and hundreds of byways which should be transformed by use into many thoroughfares and synapses, which through want of use are undeveloped, causing unnecessary delay.

Muscular education is largely the establishment of these lines of least resistance in the nervous system. They constitute the physical basis of habit.

After years of practise these nervous routes become so perfectly established and the impulses pass so easily and so rapidly that the musician is no longer able to count the individual impulses and is only conscious of a single effort.

Many years ago experience taught that which science has confirmed,—viz., that in order that these nerve courses may be brought to their greatest perfection practise must begin in early youth and be continued without interruption.

What measure of success would the pianist obtain who deferred his practical work upon the instrument until he had acquired a classical education and a thorough knowledge of the theory of music?

Watch the finished surgeon or dental operator and see how he illustrates these words.

Think of the versatility of impulse required for his most delicate manipulations. Is the result less wonderful than that obtained by the musician?

By what miracle is the operator to attain, when youth is passed, that which it would be useless for the musician to attempt?

Behind each of these motions is the brain prompting and guiding the most minute details.

Added rapidity or delicacy of touch does not indicate a lower origin of impulse but a higher culture.

Dr. José J. Rojo, of Mexico, said that he was very much pleased at having the opportunity of attending this meeting of the Institute and that his reception by the whole dental body in the United States had been most courteous.

It was moved that the hearty thanks of the Institute be extended to Dr. William S. Davenport for the consideration he has shown us in preparing this paper.

Adjourned.

FRED. L. BOGUE, M.D., D.D.S.,
Editor The New York Institute of Stomatology.

ACADEMY OF STOMATOLOGY.

A STATED meeting of the Philadelphia Academy of Stomatology was held at its rooms on Tuesday, October 28, 1902, at eight P.M., the President, Dr. R. Hamill D. Swing, in the chair.

A paper was read by Dr. J. G. Palmer, of New York, entitled "Conservatism *versus* Radicalism in Certain Dental Operations." (For Dr. Palmer's paper, see page 171.)

DISCUSSION.

Dr. Louis Jack.—I agree with nearly all that Dr. Palmer states, and will confine myself to a discussion of the well-worn subject of

the treatment of pulpless teeth. For this purpose I will classify the cases under three headings.

1. Those cases with closed pulp-chambers and which when opened present no indication of effusion from the pericementum.

In these cases the canal may be empty and comparatively dry. The pulp may have been dead for years without noticeable pericemental disturbance. There may be no evidence of pus or exudate. It would seem a simple matter to disinfect and treat such cases, but there may be morbid matter present, which is liable to be aroused into activity.

I believe it best to proceed cautiously and to protect the canals from the entrance of oral fluids while treating. I pass the drill a little way only into the pulp-chamber, and then use a crystal potassium permanganate, followed by a drop of water. It is proper to then open up and obtain free access to the canals. These should then be sterilized, as far as possible, with sodium dioxide or hydrogen dioxide. This done, the roots may be reamed out with a Gates-Glidden drill and the dioxide again applied repeatedly.

Immediate filling might now be entirely successful but as occasionally serious disturbance arises I feel that it is safer to insert a solution of aristol in oil of cloves and to hermetically seal the external opening for a few days, when, if no trouble arises, the roots can be filled.

2. The second class of cases are those in which the pulp-chamber has been exposed to the oral fluids and hence the canals are infected by mouth germs. Generally there is pus in the apical region.

It is my practice in these cases to regard the area of apical infection as indeterminate, so I disinfect and remove the canal contents as in the first class of cases, using only oxidizing agents and avoiding irritants, such as carbolic acid. For the first regular dressing I again use a solution of aristol in oil of cloves, which liberates iodine to act upon the diseased apical tissue.

In cases of copious pus flow I insert a small broach in contact with a loose cotton dressing and pack gutta-percha about it into the external orifice. When the broach is withdrawn a vent is left. This proceeding is in accord with the surgical principle of drainage.

The first dressing, left for a day, determines the amount of

possible pus collection at the apex. In healthy persons healing often results at once; in other cases it may persist. In the former case root-filling is in order; in the latter pus destruction and redressing is advocated.

If the foramen be closed, it is well to open it in any safe way, though this is often no easy matter. After opening, a zinc chloride solution, eight grains to one ounce of water, should be forced into the ulcer. This is easiest done in single-rooted teeth. In the multirooted the canals offer mechanical impediments, and the root abscessed is not always readily diagnosed.

3. In the third class of cases, in which a fistula exists, the zinc chloride solution is readily forced through it if the apex be opened. A mixture of carbolic acid and oil of cloves, equal parts, serves as well as the zinc chloride solution, and is less irritant than the weak solutions of carbolic acid.

Formalin in one or two per cent. strength may be substituted, but preferably for its diffusiveness, and should not be forced into non-fistulous abscesses. I would deprecate the leaving open of roots during treatment except when the small vent described is made for a short period in purulent cases. I also do not favor dallying treatment.

In cases of pulp removal after cocaineization I would regard immediate filling as proper and also safe where the test by a solution of permanganate indicates the absence of organic matter.

In my belief the best root-filling is a paste of oxychloride of zinc.

Dr. F. Milton Smith, New York.—I can thoroughly agree with Dr. Palmer in all of his conservative ideas except those pertaining to immediate root-treatment. He quoted me as saying, in 1898, that I fill immediately almost without exception, but unfortunately placed an emphasis upon the wrong word. I do not deviate one iota from the strict interpretation of my statement, and I treat pulpless teeth, nearly without exception, but once, and that once thoroughly and radically. In infective cases I almost always open thoroughly under rubber dam, cleanse and disinfect the root-canal thoroughly with ninety-five per cent. carbolic acid, and force the acid through the root end into the infected area beyond the apical foramen, and then, before new infection occurs, I hermetically seal the root with chloropercha (in which iodoform is dissolved) on cotton. I make an exception in such rare cases as present the im-

possibility of obtaining complete dryness of the roots, owing to an excessive purulent collection in the apical space.

The simple discharge of pus which can be stopped at one sitting is no bar to my use of the immediate method. It is absolutely good practice to so proceed, and nature is fully competent to deal with any material remaining after thorough stimulation of the apical tissue. I also do not except the cases of dry canals with offensive odor. I rarely remove pulps surgically or in a non-infective condition, but would as readily except such a case as any infected one.

I treated a central incisor containing a dead pulp of the dry variety in 1891 by the immediate method, and after the second day the tooth was comfortable. It so remains to this day.

As a rule, I suggest to my patients the probability of a certain amount of healing inflammation after following my treatment, and if it is more than a passing irritation I apply the strongest tincture of iodine in a radical manner to the gums over the apex, and it accomplishes wonders as a counterirritant. The exceedingly painful cases are rare in my practice.

This treatment, so far from giving me more trouble than the conservative method, has the reverse result. I formerly treated conservatively, and then had occasionally to get out of bed or to lose my meals to relieve cases that had been filled only after several treatments. I regret to disagree with Drs. Palmer and Jack, but am compelled to do so.

I have never endorsed lancing for trouble after immediate root-filling. In a given case Dr. Palmer sought my advice for a swelling and suppuration he had had after immediate root-filling, and I then advised the use of a lancet.

As to the amount of trouble following my method, I would say that with a moderately full practice I have not lost ten teeth in thirteen years, and two of these had had arsenic applied repeatedly and in one case at least the root had been only filled half-way to the apex. Given careful and thorough opening and cleansing, thorough antisepsis of root and apical tissue, and thorough antiseptic root-filling, I believe that any careful operator who treats and fills immediately will succeed far beyond the one who removes two-thirds of the canal contents and after awakening the bacteria in the remaining third trusts to his antiseptic to devitalize them gradually. To do the latter is to invite the trouble we seek to avoid. We should rather kill them at once in a radical way before they have time to do injury.

I should like to discuss the other subjects touched upon by Dr. Palmer, as they are full of interest, but I have fully consumed the time allotted to me.

Dr. Frank T. Gardiner.—Having practised extension for over twenty years, the good results of its use in the teeth of my discriminating patients compel me to unhesitatingly advocate it for all proximal and occlusal cavities in bicuspid and molars. Originally educated to a method the reverse of this in principle, I was driven to extension because of the persistent failure of my most painstaking operations, where the margins were left in contact with the adjoining teeth. When I afterwards extended the margin beyond the contact point my failures ceased in all cases where I was able to perform satisfactory work. It is a principle that will prevail because correct for teeth liable to recurrence of caries. For those practically immune it is not necessary, though it must not be forgotten that a period of pronounced decay may supervene at some future time.

Dr. Black has clearly expressed the point that caries occurs in greatest intensity at a spot near the contact point, and that the influence of its cause decreases in a widening zone from this centre until the immune area is reached. This fact has been overlooked by the editor of the *Items of Interest* in his editorial point as quoted by our essayist, for if the margin of the filling remain within this zone caries at the margin is quite explainable as a result more natural than the formation of a new and independent cavity. In my experience such fillings in mouths in which decay is persistent are comparatively soon doomed to failure in the majority of cases, even though inserted as skilfully and perfectly as possible.

I do not practise extension, and do not approve of it in cases of small cavities in anterior teeth which involve only the points of contact, as to do this involves the inexcusable sacrifice of large portions of sound tooth-structure. I do not use gold in these cases if the teeth are prone to decay. I, however, practise it in all proximal cavities in anterior teeth that are larger than the smallest class if gold is to be inserted.

When I say that I extend cavities on the approximal surfaces of the oral teeth, I do not wish to be understood as extending them well out on the labial wall, so "as to show distinctly," as advocated by Dr. C. N. Johnson and, I believe, also by Dr. Black.

This practice is most inartistic, highly disfiguring, and altogether unnecessary.

My experience would indicate that the point of contact is the centre from which to extend, and that the protection of the tooth does not always require that the gingival margin shall be carried well above the gum.

In young patients the gingival margin would always be carried above the gum margin, for the reason that in the young mouth the whole interproximal space is completely filled with gum tissue to the point of contact. In adult life, as we all know, the position of the gum margin is often far removed from the contact point. When this condition exists it is not necessary to extend above the gum margin.

Have not some of us been hypercritical in these matters and seeking for possible objection rather than for the good that may possibly be in them? I believe all the radical methods have their merits, and should be practised with judgment and discretion when the best interests of the patient can be served by them.

Dr. S. H. Guilford.—In regard to the matter of immediate root-filling I do not understand the question as interpreted by Dr. Jack. I never understood it to mean the removal of a mass of devitalized pulp, disinfection, and filling of the canal, but that it meant the devitalization of the pulp and its removal, or at least removal of the pulp followed by immediate filling of the canal. When we remove a pulp which is in a purely physiological condition, as, for example, for crown- or bridge-work, there is no objection to the filling of the canal at once, because it becomes nothing more than an aseptic surgical operation. On the other hand, when in former years we found a pulp dead, and undertook to remove it, in spite of our utmost care we would often have trouble. Under such circumstances I do not understand why Dr. Smith does not have bad results. He says that whenever he fills such a tooth he expects trouble and tells the patient so, and the patient finds he is correct. The patient calls him up on the telephone. Dr. Smith makes a positive statement to him that the pain will be gone "to-morrow." He must be successful, or he would not have as many patients as he has. I do not understand why he should be so successful in this line where others have failed. The question arises, Is the practice he advocates a good one for others to follow? Does it carry within itself the elements of reason that will commend it as a safe line to follow?

I believe in a certain amount of conservatism, and therefore I agree with Dr. Palmer that where there has been a pathological condition it is better to diagnose the case correctly. When Dr. Smith has the root filled he has not the same advantage as when the root is simply dressed. I do not mean by this that careless work should be done, but that careful, modern treatment should be used with the rubber dam to get the root in as aseptic a condition as possible. When I was a student the method of pumping carbolic acid through the tooth was considered very thorough treatment. To-day, as a rule, no one considers carbolic acid. There are other remedies that will do the work a great deal better.

Our friends in the western part of the country tell us that in every case of crowning the tooth must be devitalized because it is tender and will give subsequent trouble. I have been setting crowns ever since the custom was introduced and I have never had any serious results that I can recall. The difference seems to lie in the fact that the men who are radical pursue radical methods throughout. They grind teeth pretty freely, and, of course, have trouble. We can take sufficient from the tooth to answer the purpose of placing a crown without cutting away half the substance of the tooth. I utterly condemn the method of devitalizing the pulp in every case before placing a crown. I do not believe I ever devitalized a tooth for the simple purpose of putting a hollow metal crown on it.

Dr. J. B. Locherty, New York.—I have always felt that I could get better adaptation of a crown by removing the pulp. In instances in which I have placed crowns without devitalization of the pulp, pulp-stones have formed. I believe that most of us will agree that a tooth is less liable to pyorrhœa when the pulp is devitalized. Broadly speaking, there probably is a little too much radicalism, especially among the dentists of the younger school.

In regard to extension for prevention or cutting of the tooth in a radical manner, I think more care should be devoted to the preparation of the cavity than to the general line of extension for prevention.

My practice in filling children's teeth is to use some plastic material, believing that gold filling is a too radical treatment for them.

Dr. H. C. Register.—I think dentists, as a rule, place too much dependence upon mechanical manipulations. We must get down to the principle involved and treat the disease from the present

stand-point of its cause. In 1886 I commenced dehydration of the roots of teeth, and by its use dentine is made capable of absorbing germicides, and can thus be made absolutely sterile. I dehydrate by means of hot compressed air under fifteen to twenty-five pounds pressure. The heat should be as great as the patient can bear. The mouths of the tubuli are thus opened so that the fibrillæ can be acted upon. It makes no difference what germicide is used, provided it is not severe enough to cause irritation of the pericementum.

I think it ridiculous to say that we should fill children's teeth with gold. I have noticed almost invariably but little acidity in the mouths of children, while almost always you will find in the adult mouth that the saliva is acid. When we act from an understanding of the pathology of the conditions instead of depending upon mere mechanical work we will save hundreds of teeth which are being lost.

The operation of crown- and bridge-work is destroying as many teeth as it is preserving. As for extension for prevention, I think that the cases would be just as successful if extension were not carried quite as far as it is by some dentists. Gingivitis is usually the forerunner of all diseases of the roots outside of apical abscess and a very few other conditions. If dentists will take the trouble to use an electric lamp and acquire sufficient delicacy of touch in examination, they will find that nearly one-fourth of the patients that come to them have some form of gingivitis.

Dr. Palmer.—I confess I feel just a little bit pleased that I have not been sat upon any harder than I have. I knew my friend Dr. Smith came over here to combat me strongly, but I do not find that he has advanced any other arguments than he advanced in his paper to which I alluded. My impression is that he has overlooked one or two things in it to which I want to call his attention. My own experience in the treatment of devitalized teeth, extending over a longer period than Dr. Smith's, has always been very satisfactory. He spoke of losing some teeth; I tried to recall how many teeth I knew I had lost by reason of my treatment being unsuccessful, and was unable to recall more than two in my more than twenty-five years of practice, that have been extracted by reason of any difficulty in my method of treatment. There may be others which I do not know of. I have felt that I had some occasion to compliment myself upon my success. I have been particularly careful in the cleansing of canals, and have regarded

thorough cleansing as being very important, whether I used a drug or not. I cannot understand why, if the immediate filling of the root-canal is the proper thing, there should be any necessity for pain. I am certain that by my own method I can treat the large majority of cases and not have pain. Dr. Smith and some others admit that they expect pain; that it is a common thing. Dr. Smith says that he gets his antiseptic through the root. I know that he tries to. I have a very pleasant acquaintance with Dr. Smith. I know of his success, but in this article of his to which allusion has been made he states that there are some very tortuous, minute canals that he does not get through. There he does the best he can, and lets it go at that. Probably those are the ones that do give him trouble.

Dr. Guilford spoke of waiting, after having removed the pulp, until the hemorrhage should stop, when the root can be filled. I speak in my paper of having been radical enough formerly to fill under such circumstances, but have had bad results occasionally, especially where there was profuse hemorrhage. I have had a good many cases in which I have not been able to stop the hemorrhage at one sitting, and it would continue for some time. When I have filled such canals without that hemorrhage ceasing I have always had trouble. After filling temporarily for two or three days with a proper dressing there will be no hemorrhage, and I can always fill.

I am glad that my other friend from New York, Dr. Locherty, agrees with me that there is too much radicalism, and especially regrets its effect upon the younger men. This was one of the special reasons why I wished to speak upon the subject. The younger man, in his desire to accomplish great things, takes up as a fad some of the methods employed by the older men, and, forgetting the details, does not succeed, thus bringing discredit upon the work.

DISCUSSION ON DR. T. VICTOR SMITH'S PAPER, "PORCELAIN INLAYS."

Dr. L. Foster Jack.—In speaking of the deep cavities in which the proper cement had not been used, Dr. Smith spoke of the necessity of going to the extra trouble of using a pin. I think in the case of the incisor teeth it is well used, but in the first case he spoke of I would deem it entirely unnecessary. I have on occasions attempted to remove ordinary inlays, not having succeeded in obtaining the proper color, and find them most difficult

to remove. In one instance I used a diamond drill before the cement would give way.

Dr. H. B. Hickman.—I would like to ask Dr. Smith if the inlay he speaks of is a glass. If so, how long has it been in use, and will it turn black as all other glass has done?

Dr. Smith.—The material is No. 20 of Brewster's bodies, and is a porcelain, but of probably lighter color than any of the others. It has only been in use about six months. Dr. Reeves has used it a short time before it was put on the market. I cannot tell whether it will change color. It is, however, a porcelain, and should give perfect satisfaction. It is probably of somewhat lighter color than No. 1 enamel body shade. It is not entirely transparent. A considerable amount of it would change the color, and it is therefore only used in very small amounts. A porcelain is a chemical combination of two or more non-fusible substances in a fusible matrix, while glass is a combination of two or more fusible silicates.

(Replying to Dr. Jack.) There are some teeth, particularly the laterals, in which with strong occlusion it would be difficult to obtain sufficient anchorage without the use of a pin extending into the root-canal, and, of course, in those cases I deem it necessary to use it. There are a great number of cases where the pulp-chamber itself can be used and sufficient bulk to the inlay secured to give adequate anchorage. There are, however, many cases in which we need more anchorage.

On motion of Dr. E. T. Darby, a vote of thanks was extended to the essayists of the evening.

Adjourned.

OTTO E. INGLIS,
Editor Academy of Stomatology.

MASSACHUSETTS DENTAL SOCIETY.

(Continued from page 121.)

Evening Session.

Dr. James Truman, Philadelphia.—MR. PRESIDENT, LADIES, AND MEMBERS OF THE MASSACHUSETTS DENTAL SOCIETY,—The question that is before us to-night is one of vital importance to the dental profession throughout the United States and, may I add,

throughout the world. It is a matter of regret to me that I am obliged to make an opposing stand to the generally expressed opinion on this subject, that law in connection with the practice of dentistry is of vital importance. My honest convictions lead me into the ranks of the opponents of this idea, as they have often led me in the past, to oppose majorities in other directions.

From the earliest dawn of civilization there has been a conflict under the name of law or its equivalent, custom on the one hand, and the spirit of liberty on the other, or, as Goethe expressed in *Faust*, evil and good always in conflict but finally good predominating, and this, I trust, may be the final verdict of the future histories of the world; although I confess to a pessimistic feeling in regard to the over-conquering power of good over evil. Good, if I read the pages of history aright, has always been victimized between two forces of evil,—law on the one hand, and bigotry, intolerance, and oftentimes brutality on the other. These two forces were found fully typified when the great Master of human thought was crucified between two thieves. In all ages these two are found side by side, with the good between, and antagonizing its efforts to uplift humanity. The inquisition of Spain represented law. The religious persecutions in England and Massachusetts were of the same character,—force, law, and bigotry.

Dentistry to-day stands between these two forces, and, as I view it, it is being sacrificed between these two that I must regard as evil.

Let us revert for a brief period to the history of the origin of law as applied to dentistry. The first law in this country was passed in 1841 in Alabama. There was a long period between the law of this State and the next to attempt the operation of force. This was in New York in 1868, followed by a State law in Ohio in the same year, and then in 1876 the State of Pennsylvania joined in the procession by an act regulating dentistry.

What were the conditions existing prior to the enactment of laws in these several States? From my own personal observation, the dentists of that period enjoyed a comfortable time. They were not troubled with law, and pursued their vocations with the kindly feeling that what they could do others had an equal right to perform. The man of empirical tendencies was there, but modest in comparison with the "Dental Parlor" man of to-day. They were so few and so comparatively unobtrusive that they were not a cause of much concern with the better men in dentistry. Com-

petition was not great at that period, and the careful operator received the full value for his services. It was during this time of quiet professional life that some unrestful spirits demanded law to regulate the practice of the profession.

Who demanded that these laws should be enacted? Was it the good people who desired them? Were they praying our legislators to place these acts upon the statute-books of the several States, that they might be protected from the pretenders in dentistry? Did the demand for law come from the limited number of graduates of the period? Had the faculties of the dental colleges then existing any voice in the formation of these laws? Was it a demand from the dental profession as a whole? The answer to these several queries must be in the negative. Neither of these bodies expressed any burning desire for the enactment of laws. So marked was this indifference that legislatures after a time refused to pass the bills presented. They were unwilling to abridge the right of the people to earn an honest living. Who then did work for the laws? A few in the profession existing in all bodies and in all nationalities who have more faith in force than they have in progress by moral suasion.

Have these enactments, that are now on the statute-books of nearly every State of the United States, benefited anybody? Have they made the path easier for the students? Have they lessened the number of empirical establishments? Have they protected the people of the country? And, finally, have they protected the dental profession?

The argument has been advanced that through these laws and boards of examiners dental colleges have been forced to raise the standard of entrance, to increase the time and multiply the subjects of the curriculum. This never was true, for natural development has forced the dental colleges to an advanced educational position, and they would have reached this standard with or without law. The laws have made it more difficult for the student; inasmuch as he must pass a second examination at an increased and unnecessary expense.

The "Dental Parlors" have multiplied all over the land. While formerly confined to a few of the large cities, they have now a place in all small towns, lowering the standard and degrading the profession. By their alluring advertisements they tempt the people, and they, in the end, suffer, and the laws fail to protect them. Young graduates are tempted by good salaries to accept positions

with these, and they, in turn, become ethically demoralized. I hold, therefore, that these laws, intended, it may be, for good, have proved dismal failures.

It seems to me that this craze for law, has been steadily growing, until the people of these United States can no longer call themselves free. Those who have lived in Europe can draw a lesson from the evil results of custom and law gradually depriving the people of liberty. From personal observation I am convinced that, let the form of government be what it may, whether a monarchy or nominally a republic, as in France or Switzerland, there will still exist the same depressing statutes. What is true there will in time be true here. It is the gradual and insidious encroachment of law over the freedom of the people. I do not wish to speak disrespectfully of law. I hold that it is necessary within limitations, but I am not willing to become a slave to a seemingly necessary evil.

I do not suppose that anything I may say here to-night will change the current of general thought on this subject or lead to a removal of a single law upon the statute-books. You are bound to be subject to law governing your profession. Hence, with every State seeking to make its law in medicine and dentistry more and more oppressive, it seems a waste of energy to meet this tendency with words. As a learned body of men and women you can, equally with myself, measure the results that are sure to come from this deification of force.

In closing, I propose to depart somewhat from the subject, as my friend on my right took the liberty of doing. Permit me first to thank you for the kind invitation to be present on this occasion, even in the disagreeable capacity of an opponent. I am comparatively a stranger to the majority here, but I am not a stranger to much that has made Massachusetts honorable among the people of this country. I have sat under the eloquence of Wendell Phillips, and have drawn inspiration from your Longfellow. Holmes, Whittier, and Lowell; have been taught wisdom by Emerson, and have gathered a liberal theology from Theodore Parker. and I can say with your great orator and statesman, Daniel Webster, "I can pass no encomiums upon Massachusetts, she needs none. There she is, behold her and judge for yourselves." She stands to-day the embodiment of all that is free in these United States. The spirit which animates her had its finest illustration amid the rattle of musketry at Bunker Hill, and found its deepest

response at Independence Hall, Philadelphia, amid the acclaims of the multitude and the ringing sounds of the bell that proclaimed liberty throughout the land. It was echoed at Valley Forge and re-echoed at Yorktown, and when the other day I read a speech by a Massachusetts representative on the floor of the Senate of the United States, my soul was filled with admiration, and when I read his denunciation of my country for its work in the Philippines for its desecration of all that this people has regarded as sacred; when he denounced the horrors and brutalities committed by our soldiers in that country, only equalled by the Inquisition of Spain, I mourned for my native land, but gloried in the spirit of freedom that had not died in Massachusetts. If liberty be dead in the Philippines, the Anglo-Saxon race is preparing to bury the remains in South Africa.

Pardon this lapse into a foreign subject, and yet not altogether foreign, for it all concerns law on the one hand and brutality on the other. The spirit which antagonizes this has found its best life in this State, and may I repeat, Massachusetts! there she stands, behold her, the glory of the American Republic!

President Faxon.—It is not much of a task to introduce the next speaker. Do not misconstrue my meaning. It is not because he is of so little account, but because he is of so much account, so much consequence, holds such an honored position in the dental profession, as to be well-known and highly esteemed by all of you. I therefore take much pleasure and pride in introducing to you as the next speaker the Dean of the Dental Department of the University of Pennsylvania, and editor of one of the most valuable contributions to our dental literature, the *Dental Cosmos*, Dr. Edward C. Kirk.

Dr. Edward C. Kirk, Philadelphia.—MR. PRESIDENT, LADIES, AND GENTLEMEN,—I am not exaggerating when I say I am utterly at a loss as to how to proceed. I find myself very much in the position of the man who, I am informed, a short time ago went to a banquet without having been assigned a subject upon which to talk, and when he was called upon he rose with some embarrassment and said, "What shall I talk about?" Whereupon some one at the farther end of the room replied, "Talk about a minute." I feel very much inclined to talk "about a minute" or less. But seriously speaking, what can I say, what could be expected of me after the eloquent address of Dr. Truman? I might say that I

think those of us in the "majority" might pardon him for the heresies in the first portion of his address in consideration of the magnificent tribute which he has paid to the genius of Massachusetts in his peroration. Dr. Truman knows that any difference I may have with him in this connection or in any other is a difference of opinion only. If I am antagonistic, it is to what he has said and not to him personally. I must say frankly that I cannot agree with his position. As I view the matter,—and I know Dr. Truman believes I am honest in my convictions,—the law governing and limiting the practice of dentistry is not working out such evil results or such useless results or such fruitless results as he seems to feel that it is. I am not able, as he is, to say from personal experience what were the conditions governing dental practice at the time to which he refers, at the time previous to the enactment of law in dentistry, but I would like to add because of the impressions I have gained from my study of the historical aspects of our profession, if the conditions were as he has portrayed them, what were the causes which led to the formation of a national society of dentists at that time, or what were the conditions which led to the other great factors in our professional progress,—the founding of the first dental college and the first dental journal which marked our birth as a profession? These three great factors were established at the same time, bringing order out of a condition of professional chaos. It seems to me that the development of these three important factors was a practical protest against the charlatanism of the time. The unprofessional conditions of the time were thus brought under control to the end that a professional gathering such as this to-night might come into existence. Was it possible before that event to speak of a dental profession in any such sense as we have it to-day? I think not.

Now, let us examine for a moment another feature of this question of the dental law that has been touched upon somewhat by both of the gentlemen who have preceded me. The dental law is enacted for the protection of the public. That we know is its intent and purpose, and nothing else. Incompetence in the practitioner and professional advertising are by no means interchangeable terms. Dr. Truman makes a point that by reason of the operation of the dental law quacks are compelled to employ qualified men. Speaking in terms which are familiar to the distinguished jurist who has formally presented this case to-night,

I would say, may it please the court, it seems to me that when Dr. Truman admits that fact we may rest our case, for we have in that the demonstration of our main contention, because it is admitted that the law has compelled even the quack to render better professional service to the public by employing only qualified operators.

We find in the matter of dental legislation no relief from the annoying fact that a man may advertise and still render competent service to the public, and the law has not yet dealt with that question, nor will it ever be able to so long as advertising in general is regarded as a legitimate business procedure.

Now, as to the beginning of the dental law. There were no dental laws, strictly speaking, before there was a dental profession, but it is on record in the writings of the man who has been called the father of dentistry, Pierre Fauchard, that in the year 1700 a law provided that those who intended to practise dentistry in France should appear before a board of examiners to have their qualifications tested, and that they should not be permitted to practise until they obtained a license to do so. There was no explicit dental law until the law of Alabama was passed, but Horace Hayden practised dentistry under a license which was issued to him in 1810 by virtue of an enactment passed by the Legislature of Maryland in 1798 creating a Board of Physicians charged with the duty of examining into the qualifications of all who intended to practise medicine or surgery in any of its branches; so that the idea of dental legislature is not a novel one.

There are perhaps two other features to which I may be permitted to refer in this connection. First, with reference to our attitude as a profession towards the question of dental legislation. Our ideas in regard to it are necessarily the result of the evolution of our professional needs. It seems to me that it may throw some light on Dr. Truman's question if we consider the fact that a great deal of our trouble in connection with legislation depends upon our misunderstanding of the term "liberty." We will have to redefine the term liberty. It is true that by dental legislation we have placed a certain limitation upon something of a man's natural right to perform certain acts which in more primitive conditions of society would be properly regarded as an unwarrantable interference with his liberty. But as society is now organized the average common sense of the people says we may do this when

one's natural right to do as one pleases is detrimental to the welfare of the community. It is not the individual's right to do altogether as he pleases, but as the community dictates he shall do without interfering with the equal rights of others, that constitutes liberty. If all men were willing to do the right, we would need no laws other than the ten commandments, but under existing circumstances we are compelled to prescribe limitations to the activities of certain classes in order that we may protect that thing which we call liberty and its enjoyment by the community. In the second place, it is quite true that much of our dental legislation is faulty and absolutely unjust, and I take it that the reason for that fact is to be found in the ignorance of the dental profession as a whole with respect to, first, what they want to accomplish by dental legislation, and, secondly, how far dental legislation is capable of meeting that want. We need further training and experience in this matter before we shall be competent to state just what ends we need to accomplish through dental legislation, and a still further and specialized training before we can accurately crystallize the expression of that need in the formal terms of a dental law which shall be equitable and just to all parties affected by it. Then there is the other obstacle to effective legislation, the outgrowth of the political entanglements which modify and control the actions of legislative assemblies. A bill may be correct and satisfactory in all of its provisions and yet fail of enactment as law by reason of the modifications and amendments to which it is often subjected by parties having conflicting personal interests which they bring to bear upon it in its devious course through the State Legislature.

I do not agree with Dr. Truman's idea that proper dental legislation has not been of value to our dental educational system. I believe that it has been of immense value. If the State requires a certain standard of professional qualification, and, more than that, prescribes that before entering upon his professional training the student shall have had a requisite amount of preparatory education, it seems to me that such a law necessarily acts as an influence to bring to the colleges men better prepared to profit by the college training; but further than that a high State standard of professional qualification is a check, and we may just as well acknowledge it right here, upon the tendency which here and there arises to graduate men who are not competent for the

practice of dentistry. I am strongly of the opinion that in the fostering care of the State, expressed through the enactment of wise and equitable dental legislation, is to be found the principal hope for a high standard of dental education.

Then, if it is right and proper that the State should review and keep a check upon the educational work of the college faculties for the benefit of the public, it is also equally right and for the benefit of the public that the State should require an open public record of the work of the examining board. It is the public in both instances that are to be served, and the public that should be the final arbiter in both cases. Provision should be made for the prompt removal of any examiner upon proved charges of ignorance or any form of incompetency in his work. I am of opinion that when our conception of the desirability of a dental law which is equitable to all parties concerned has reached a point where we can formulate an act of that character, one which will conserve the right and eliminate the wrong from our system of educating and licensing practitioners of dentistry, all grounds for disagreement as between the teaching and the licensing bodies in dentistry will have been eliminated.

President Faxon.—Ladies and gentlemen, the next speaker on the programme has been so prominently before you through his eminent career that no words that I could say would add to your good opinion of him. I know you are all much more interested in what he is to say than in what I have to say about him. He is Dean of the Philadelphia Dental College, and I take great pleasure in introducing to you Dr. Guilford, of Philadelphia.

Dr. Simeon H. Guilford, Philadelphia, Pa.—Some one once asked the question, "Is life worth living?" and another wittily replied, "That depends upon the liver." And so it is, I think, with regard to the dental law. If one is asked whether he approved of the dental law, the reply will depend upon what particular dental law is under consideration, because, as we know, there are dental laws and dental laws; some are good, some are not. But there is one thing we are very certain of, and that is that the motives which have prompted the enactment of dental laws have always been good motives. There never has been anything back of the enactment of the dental laws that I know of that flavored of self-interest in any way; they were really intended for the good of the profession and the good of the public as well. It is

unfortunate that we cannot have dental laws enacted in the different States that are considered good and yet are similar in character. It is due to the difference in human nature. Dental laws are not enacted by professional men, ordinarily so called, but by legislators, and I think even our legal friends will agree in saying that the ways of legislators are sometimes past finding out. Oftentimes we can accomplish something by approaching them in a certain way. If you would like to see a real "blue ribbon" legislator, come to Pennsylvania and we will show him to you.

But, as I have said, the opposition to dental law does not rest solely upon the fact that these dental laws are restrictive of the right of the dentists to practise. It is largely because of their imperfections. Let me give you an illustration. Suppose that in 1900 a young man living in the State of New Jersey, and who has already attended two annual courses in one of the registered medical colleges in New York City, desires to study dentistry. He decides to attend one of the dental colleges in Philadelphia. He does so and passes through with credit. He then thinks he would like to pass the Examining Board of Pennsylvania and receive his certificate, which he does. He returns to his home in New Jersey and there concludes to take the examination of the Board of New Jersey; he does so. About that time he is attracted to the city of New York, feeling that he will have a better opportunity to practise there. He sends on his credentials, and after a little while receives a paper stating that they are entirely satisfactory and that he will shortly receive a permit to go before the board and be examined.

Then let us suppose that in some way or other he fixes his eyes upon the State of Massachusetts, and thinks he should like to practise there. For some reason he decides that this would be better. He goes to Massachusetts, consults some member of the board, and is referred to the genial president of the State board, who tells him that it will be impossible for him to practise unless he takes an examination and pays a fee. He has already graduated from a reputable school in Pennsylvania, has taken the examination in Pennsylvania and New Jersey, with the promise of New York, and he wonders whether under the circumstances he cannot be admitted to practice in the State of Massachusetts. The officer informs him that it is quite out of order, and tells him very plainly that, while he is very sorry for him, the law requires that he should

be examined. The young man says he has no particular objection to being examined, but he has already paid three examination fees in three different States, and he feels that it is hardly fair to ask a fourth. He is told, "If that is the case, there is nothing for you to do except to step out and retire." In other words, he must comply with the law.

He goes back to the State of New York to take his examination there. He finds a letter awaiting him stating that from his papers it would appear that he is not qualified to come up for examination, because, although he has spent two years in a medical college and two years in a dental college, the law requires three years in a dental college. The young man hurries off to Albany. He states to the regents that he has passed two years in a New York medical college and two years in a reputable dental college, and asks whether these four years of study are not enough to have given him sufficient qualification to register in the State of New York, especially as the National Association of Dental Faculties has declared that two years in a medical college shall equal one year spent in a dental school? The authorities say, "No; because the law requires three years in a dental school." He asks what he is to do. He is told, "The only thing for you to do is to go back to your college and attend another year. "But," says the young man, "I have graduated." "Never mind that, go back anyway."

He returns to New York City very much discouraged and disappointed. He retires and tries to sleep, but his brain is in such a whirl that he cannot sleep, and as he lies awake he thinks the whole subject over and wonders why it is that while he is in pursuit of a livelihood, a young man cannot pass from one State to another, and if he is qualified in two or three, why he should not be qualified in just as many more. He recalls that in Europe, when a man is declared qualified to practise in one city or part of France or Germany or Russia, he has the legal right to practise in all parts of that country, and being qualified in England entitles him to practise in any of her colonies as well.

That being the case, he does not understand why in free America, when he chooses to pass from one State to another, he has to be held up. He falls asleep and passes off to dreamland, and, as is so often the case with many of us, his last waking thoughts influenced and determined the character of his dreams. Translated to another sphere, he finds himself walking along the golden streets.

and notices that the countenances of all whom he meets are perfectly serene and happy, and while he realizes that he should be as free from care or sorrow as they evidently are, he is conscious that he is not, and wonders why. Just then he meets a shade, which approaches him and says, "My friend, your countenance is sad and you seem sorrowful. Do you not know that the sphere in which you now are is one where sorrow and unhappiness are unknown, and that those who dwell here should be supremely happy? I noticed that as you walked the streets you would often glance around as though some fear oppressed you." The young man replied, "Perhaps I have done so unconsciously, because in the land from which I came I had been very much worried by individuals who have kept pursuing me and interfering with my pursuit of a livelihood by demanding fees and examinations." The shade replied, softly, "Rest thy soul, brother, those men never come here."

But that did not end the young man's troubles. After he waked he felt that there was nothing for him to do but return to his former home in New Jersey, which he did. After a number of years his health failed. He sought a milder climate in Colorado, but he found he could not practise in that State because he was not registered. Then he tried California, where he met with the same condition of affairs.

All of these misfortunes have probably not happened to one individual, but all of them have happened. I have tried to draw a composite picture, and have put the matter in this form that I might impress you with the fact that there are very grave weaknesses in our present dental laws. Take the State of Massachusetts. According to the law here, it is not necessary for a man to be a graduate of a dental college. All that is required is that he have sufficient education to enable him to pass an examination before the State board. The law works in this way. The man may receive a dental education in any way he pleases, and if he passes, well and good. But it happens that the examination is of such a character that he probably could not get through without some college training; so after two years in college he comes to Massachusetts and takes the examination before the board. If he should succeed, as he often does, there is no necessity for his going back to college; if he does not, he simply completes his college course and then comes back for examination. This is a

radical weakness in the law of Massachusetts, and one which will have to be corrected. Another weak feature that belongs to all of the States is that a man who has been a reputable practitioner for a number of years cannot go into a neighboring State and practise dentistry without submitting to an examination. The man may have been very successful in practice, and have served his patients well; he may have kept fully abreast of his profession in a general way, or may even have been an instructor of students in a dental college, but he might not be able to pass a State board examination after his many years' absence from lectures and text-books. The older practitioners could not do it. I could not do it. I might pass in my own branch, but in nothing else. Another feature to which I desire to call attention is that while dental laws have been enacted for the protection of the general public, that is the very thing they do not do. Dr. Kirk makes the point that the dental parlors have been forced to serve the public better. Not a bit of it. They do not employ these young men because they are the best, but because they are graduates. They would not employ them for a moment if it were not that the laws cannot interfere with them. They are simply doing something to protect themselves, and they are demoralizing a class of young men who were intended for better and nobler things. These very men are themselves seduced, for they are taught while in college to respect and obey the laws. These proprietors of advertising offices are the very ones who should not be shielded by the law: and yet there seems to be no good way of preventing it. If our attorneys would get together and formulate a dental law which would take hold of these men and stop their illegal practice, we would all be grateful to them. If that could be done, dental laws in general would be more generally approved, for they would then be fulfilling their highest mission.

President Faxon.—We have three more speakers to divide the limited time among. I now have the pleasure of introducing to you Dr. Hurlbut, of Springfield, Mass.

Dr. J. Searle Hurlbut, Springfield, Mass.—MR. PRESIDENT, LADIES, AND GENTLEMEN,—I have listened with pleasure and pain to the remarks of the eminent speakers who have preceded me. With pain, because of some views here presented, and also that one by one they have taken up my subjects, till not one is left. I feel as might a fisherman who, equipped with rod, reel, and

basket, about to drop the baited hook into the promising holes along the stream, suddenly discovers that others have just "worked the stream" and landed the fish. When I came here to-night, I thought the millenium had almost dawned for dentistry in this country. I had thought that the dental law was a power for good in elevating our profession, ranking with the colleges, the journals, and the societies in stimulating to higher education. In spite of assertions to the contrary heard here to-night, I think so still. Can it be that I have made sacrifices for these many years in vain, endeavoring to carry out the provisions of the dental law of Massachusetts, to the end that the people be protected and our profession elevated?

Only the opportunity for service to the people and to dentistry could have induced me to accept a position on the State board. On the passage of the law in 1887 the people were not in sympathy with it; even our profession within and without our societies gave it little support and some opposition.

Thus it behooved that commission to go slowly in enforcing the law. A sworn statement of having been in practice was all that was required to secure a license. The law could not be retro-active; could not deprive a man of his means of support. Doubtless many false returns were made, as the board had no authority to go back of such sworn statements.

In the examinations lower averages were accepted, until sentiment in favor of the law was strong enough to warrant the gradual increase that later followed. To aid the many impecunious applicants, the board often worked from nine in the morning till twelve at night, with but short rests at meal-times. Can it be that all this labor was in vain?

We have listened to-night to words of wisdom from an eminent barrister. He has given us his views, and his advice as his experience warrants. We have listened to words of wisdom from eminent teachers and journalists of our profession. Some have encouraged and cheered us on our progress. One grand sentinel of the past, a man much revered, honest, earnest, and beloved, has called us down from our high pedestal, and unfavorably contrasts the present with the past. Let the dead past bury its dead, say I. He truly says that "every State and Territory has its dental law." Does it not convince him, as it does us, that this unit of action means progress? Out of his own mouth is he condemned.

This is the twentieth century! The trend of our profession is upward.

Many points were brought out by these wise men from the South it were well to discuss, but the lateness of the hour prevents.

In many States a diploma from a reputable college admits to practice. Not so in Massachusetts: the law expressly states that "applicants must be examined." The wisdom has been apparent many times. The same conditions are enforced in the legal profession. The last speaker said, "It is a hardship not to have an interstate license." In many cases it is, but in the main it is just and right. As "no chain is stronger than its weakest link," so the standard of practice would be lowered, the incapables would gravitate to the "easy" States for examination, and thus obtain permit to practise in States where they previously failed.

Not till a national commission shall do all the examining, or all the States have uniform examinations, would it be wise to make the change. The rightful solution of this question is foreshadowed in the acts of all progressive colleges, requiring a high school education and four years for graduation. Thus equipped, a candidate would be able to pass any and all State boards.

I will detain you but a moment longer, to point to a weakness in our own State law, in its lack of means to prosecute offenders. I would have our State society appoint a prosecuting committee with full power to engage legal talent or other agents. All surplus moneys turned by the board into the State treasury should be available for this purpose. If necessary, the State society should appropriate a further sum. Ladies and gentlemen, I thank you for your courtesy.

President Faxon.—Dental legislation is still undeveloped, and I know of no one who is better able to carry on this discussion than one who has been a member of the Board of Dental Examiners of the State of Connecticut, Dr. George L. Parmelee.

Dr. George L. Parmelee, Hartford, Conn.—Most examining boards have their practical and their theoretical examinations. Occasions like this, too, have their practical and theoretical side, and I have been hoping all the evening that you would only expect me to do my duty on the practical side,—that is, to give you a practical demonstration at the table. In performing this practical duty I feel that the most tyrannical examiner would give me

ninety-five per cent., which will, I trust, help me through the theoretical ordeal I am now about to attack.

I have always been a firm believer in the theory that the way to a man's heart lay through his stomach, my favorite proverb being, "The carving knife is mightier than the sword." I have been and still continue to be a staunch advocate of the social feature at all professional meetings.

A great deal of effort has been rightly expended, first and last, in endeavoring to obtain such legislation as should elevate and purify the practice of dentistry, but I am inclined to think that the influences of such an organization as yours,—and occasions like this,—Mr. President, may exert more lasting benefit along those lines.

For me to attempt to address you after the illustrious guests that have preceded me seems presumptuous, or, as the Japanese say, "Like painting feet on snakes."

The field covered by the subject under discussion this evening is so vast that I feel very much as did one of your little Massachusetts school-boys. His teacher, after telling her class all about the landing of the pilgrims, requested her pupils to draw from imagination a picture of the Plymouth Rock. There was considerable confusion, however, when one little fellow got up and asked if she wanted a hen or a rooster.

The majority of the dental world labors under the idea that the dental laws were passed to protect the dentist from the dentist; that is to bar out the "dental parlor" man and admit to practice only those who live up to the code of ethics. Still, notwithstanding the fact that more or less selfishness on the part of the dental profession prompted the advocacy of such enactments, the laws as they exist to-day are for the safety and welfare of the people.

Where the successful prosecution of a calling requires a certain amount of technical knowledge and professional skill in a practitioner, and where the lack of it may result in damage to one who employs him, it is a legitimate exercise of police power to prohibit any one from engaging in such calling who has not been previously examined by lawfully constituted authority and received a certificate of qualification.

The writer of a recent article in one of our journals severely criticises our State boards because they have not diminished the number of dental parlors.

Every class of society has its scum, and our specialty is certainly no exception. I favor a high standard for license, but a high standard, while it demands competence in those entering upon practice, cannot control their future actions or methods of practice.

Examiners cannot, other things being equal, discriminate, even though they are convinced that the candidate will practise in utter violation of the code.

The law does not and will not dictate methods of practice, but simply expects the examiners to determine whether or not the candidates are safe persons to treat the teeth of the public. The question of conduct of practice—or malpractice—is another story.

What do the class of people who patronize the dental parlors care for the code of ethics? From their stand-point, the man who apparently gives them the most for their money is the best dentist. They do not want to be our patients; we do not want them.

If the examiners see to it that only competent men enter practice, these offices could, if they only would, do a good work among the poor. Such offices are better in some respects than the pauperizing dispensary evils of some of our large cities.

The advertising man is the dentist of the masses, and can, if he will, do well by them. Dental legislation can never force the masses to patronize only code-abiding men, neither can it prevent the best-educated practitioner from being a quack if he so desires.

“You can lead a horse to water, but you cannot make him drink.” So too, you can educate a dental student and deluge his mind with all that is best in life, but when he has graduated, unless he has in his heart a true conception of the Golden Rule,—which is the germ of all ethical codes,—your labors have been in vain.

Regarding the mutual relations of the State dental societies and the examining boards it would hardly seem possible that there could be any question. The dental societies should represent the best that is in dentistry, in the community, and should have at least the privilege of submitting a list of names to the executive from which the examiners are chosen and appointed.

The problem as to how we can best combat the evils of political influence and, worse than all, the petty “peanut politics,” rings, and boss rule existing in some societies, remains to be solved.

On general principles, then, I claim that the examiners and the societies should in all ways possible aid each other.

Now a word regarding the preliminary training of the dental student. It is not for me to say how dentistry should be taught. Let abler minds attend to that; but thirty years' experience in practice has firmly impressed upon me that the best preliminary training for any man is that which will best fit him for his life's work. Therefore, for the dentist I would suggest that his literary training be ample; that he have such thorough grounding in physics and biology as to insure a firm foundation on which to build his special science; but first of all, for a dental preliminary, let him acquire the manual training "whereby hand, mind, and eye are educated by means that conserve vitality and develop a union of thought and action."

I am fully convinced that some method must sooner or later be devised to bring about an interchange of licenses between States. Still I have heard some able arguments against such interchange, as tending to create a roving spirit, and as being of greater value to the itinerant practitioner than to any other.

The New England Association of Dental Examiners has been, and still is, doing good work along these lines, and it seems to them that the only method whereby the interchange can be accomplished is by the gradual equalization of the standards of examinations in adjoining States.

We may get the best dental laws passed, but unless there are better means of enforcing them than there seem to be at present, the benefit to be derived from them is limited.

Here, too, there seems to be a mistaken impression in the dental world that on the examiners alone devolves the duty of prosecutions.

The ethics of their profession and official position may justify and possibly expect from them greater interest in securing the faithful observance of these especial laws than would be expected from the ordinary citizen, but the extent to which they shall gratuitously sacrifice themselves, their own time, money, or convenience, is for their own judgment to decide.

The examiners should be ready at all times to extend every possible aid and information in such cases. Collecting evidence and acting as prosecuting agents are not within their province.

While it is evidently the duty of every well-disposed citizen

to see that the law is obeyed and to assist in securing evidence, it is a well-known fact that what is every man's business is no man's business, and is never accomplished.

The dental societies of a State should take up this duty, appoint prosecuting committees, and establish a fund sufficiently large to thoroughly accomplish the task. I am correctly informed that in a near-by State—and, in fact, about the only State where the matter of prosecution is fully attended to—one of the examiners has expended several thousand dollars in the work from his own private funds. Unfortunately, all examiners are not in position to do this.

President Faxon.—A few moments before we came into the banquet the next speaker asked me, "Why did you put me at the end of the list?" My answer was, "I put you there because I knew you had the ability to say a great deal in a short time, and we want some one with that ability to wind up the evening, and, therefore, you were chosen." Allow me, therefore, to introduce to you Dr. Thomas Fillebrown, of Harvard University.

Dr. Thomas Fillebrown, Boston, Mass.—MR. PRESIDENT, LADIES, AND GENTLEMEN,—I suppose I am called upon to pronounce the benediction. At this late hour it ought to be short. This whole subject has been discussed so thoroughly that there is little left for me to say. I can certainly say "Amen" to the most that has been said to-night. While I disagree with our friend from Philadelphia, I acknowledge that there is a good deal of truth in the spirit of what he says. I fully agree with the remark of my friend Guilford, that the inefficiency of the laws comes from the neglect of their enforcement. This is because human nature has not become quite perfect enough yet to work out its own salvation in the true way. I think it might interest our Philadelphia friends and the strangers here to-night for me to recall the history of the dental legislation here in Massachusetts. Several times before this law was passed this Society sent a committee to the Legislature asking for a dental law, and it resulted in simply nothing at all. The committee could not obtain even a patient hearing. Finally, Dr. Lewis T. Foss, of this city, single handed, without assistance, financial or otherwise, went to the Legislature, and during the same session Governor Ames signed a dental registry bill. This same man was my assistant for some years, so, of course, I am a remote cause of the result.

There is one phase of the law that has not been discussed to which I will call your attention. It is the administration of the law that makes law beneficial to the community. In every community violations of law are winked at. Occasionally it may be for the best interests of the public that this is so in isolated cases. Perhaps there are some laws here in Massachusetts administered in some such way. It is the duty of the community, the profession, and society in general to see that the law is properly administered. A dental law must be obeyed in every case if it is to be respected. Every person who is interested in our State societies should see to it that men are appointed to the Board of Dental Registration of Massachusetts that are free from political obligations, and as far as possible of superior learning and professional skill, unprejudiced and of broad judgment, so that we who are devoting our time, energy, and money to the education of young men can feel that we have a standard which is pure, high, and, above all things, impartial. We as teachers should also have the ability to make them feel that our judgment is something they can rely upon. Now I give you my blessing.

Adjourned.

(To be continued.)

INTERNATIONAL DENTAL FEDERATION AND INTERNATIONAL COMMISSION OF EDUCATION: JOINT GENERAL MEETING WITH THE AMERICAN DENTAL SOCIETY OF EUROPE, STOCKHOLM, SWEDEN, AUGUST 16 TO 19, 1902.

(Continued from page 64.)

Saturday, August 16.

THIS session of the Federation was called to order by Professor Lindström.

Dr. A. W. Harlan.—MR. PRESIDENT AND GENTLEMEN,—Very unexpectedly I am called upon to say something concerning the object of our meeting here to-day. You will expect from the number who have come from the United States, a long distance, that we are much interested in the object of the International Dental Federation. It seems but a short time ago that a little

body of men in Paris gathered together and gave forth the idea that there should be an International Dental Congress. From the moment the idea was broached I cordially and heartily supported it. My *confrères*, many of whom are present to-day, were most earnest in support of the idea of an International Federation, and Professor Brophy and Professor Barrett, and other members interested who are not here to-day, were among the first supporters. Out of that little congress, numbering only a few hundred, at which were present hardly a baker's dozen from the United States, grew the great and successful Columbian Dental Congress in Chicago in 1893. It is not so long ago that any of you will have forgotten the splendid assemblage from countries to the number of twenty-seven who participated in that Congress. After the successful termination of that congress and the publication of its proceedings the congresses were stamped as a success by the profession of the whole world, and when it was intimated, in consequence of the projection of a universal exhibition in Paris in 1900, that another congress was desired, the whole professional dental world to a man gave it its support, and before the termination of that congress the wise men there gathered decided that the interest and enthusiasm excited by the Congress should be further continued by cementing all countries into an International Dental Federation, to concern itself with the teaching of dentistry and make it as nearly uniform as possible.

It was in consequence of that movement in Paris in 1900 that we had the eminently successful meeting in London and Cambridge last year. The success of that meeting was due, I might say, almost wholly to the single efforts of one of our number on the Executive Council, Dr. Cunningham, of Cambridge. Without his invaluable assistance and foresight we would not have had the successful termination of such a large meeting. Its proceedings have been published in all languages and sent everywhere, and to-day, in consequence of the enthusiasm that was spread abroad, the colleges and institutions of learning and societies throughout the world have contributed delegates to be present in this far northern city of Europe, showing by their presence that they are willing to support us, and showing also that they have the one principal central idea, the betterment of the profession and its further universal, international advancement. I thank you for the opportunity of saying these few words, and I hope the de-

liberations of the Congress will be as successful as have been those of previous years.

Mr. W. E. Harding (president of the British Dental Association).—I have very great pleasure in rising to say a few words on behalf of the English dentists and the British Dental Association, of which I have the pleasure and honor of being president this year. That we are very few in number at this international gathering I think must be in a great measure put down to the apprehension that many of my *confrères* have of the inhospitality of the North Sea,—not the inhospitality we should meet here, but that the crossing might be somewhat “lumpy.” It is the first occasion on which I have attended a gathering of the International Dental Federation, and, seeing the enthusiasm of the many countries that are represented here, I feel sure that the outcome must be for good. Dentistry, like science, is of no nation, no politics, and no country.

Among the subjects for discussion I see there are several of very great interest. The subject of state dentistry is but now awakening, and we are only on the threshold of what it will be in the not remote future. There are many directions in which the state ought to help us and we the state—if the state will but allow us. I am sure that a gathering like this must help on the good work. Meeting together and rubbing shoulders takes off the angles and points of friction between us, and leads to fraternization which must be of great benefit to our science and our calling. I thank you for the patience with which you have listened to me, and the reception you have given to the English members of this congress, and I hope that the meeting will be for the good of the profession.

Dr. J. Franck, Austria.—I have the honor of presenting to you the greetings of the organized body of dentists of Austria and Hungary. Appreciating the importance of the questions on our programme, they have asked me to convey to you their thanks for the disinterested work in which you are engaged for the benefit of the profession at large. Full of hope, they are awaiting the results of this work. I feel happy to be the bearer of these expressions of confraternal feeling from the Austro-Hungarian dentists.

Dr. Smith Houskin.—As a delegate of the Norwegian Dental Association I bring a greeting from the Norwegian dentists. We

live in a country which to many present may seem to lie far up in the north, away from the great centres of culture, but thanks to the excellent communications of the present day we feel ourselves not so far away after all. Every summer we see in our country great numbers of travellers from south, east, and west many of whom are fond of coming back. But we do not feel ourselves fully satisfied by only seeing visitors in our country from abroad. No! Norwegians from the days of the Vikings to the present moment have had longings for foreign lands themselves. Even as the Vikings of old brought to the country precious treasures,—as for instance the finer culture and Christianity of England, France, and Ireland,—so travel the Norwegians in the present day, and not in the least the Norwegian dentists, to find the wealth and treasure of knowledge and science. From the greater centres there ever blow into our land the fresh winds of a higher culture, and without denying our nationality we take to ourselves all which brings the spirit of man and mankind a step nearer the ideal.

We, therefore, value the international energy of science. For this reason the Norwegian Dental Association looked with interest on the work of the International Dental Federation, and it is the association's great pleasure to get the opportunity of connecting itself with this important society. The pleasure is all the greater as our first meeting with the Federation is here in Stockholm, where we have at the same time an opportunity of meeting so many of our honored Swedish colleagues and friends. We have great expectations of the Federation and its work, for, in the first place, it is by taking up such important questions as dental education and public dental hygiene that we are enabled to reach the greater dental interests, and secondly, because at our head stand men of talent and skill. The energetic president, Dr. Godon, and the untiring secretary, Dr. Sauvez, we all know for their colossal work in connection with the Paris Congress. With the hope that such gentlemen will always stand as the leaders of the Federation, we wish a successful result to the Congress.

Dr. Weber, Helsingfors, Finland.—On behalf of the Finnish Dental Society I speak to you now, and I do so with profound feeling. When I think of so large a society with such great men, and between them the little ones, I am overwhelmed. We can all see the great men, but not the little ones; but if for a moment

you can observe the little ones, I thank you for that. I am happy that you have recognized me, and further am happy to be the representative of a country from which, though it is not a large one, I bring you greetings. I hold in my hand a document, signed by the vice-president and secretary of the Finnish Dental Society, in which the society presents its greetings and expresses its gratitude for the recognition which has been shown to Finland, and expresses the hope that the Federation will be the means of cementing together the delegates from all countries, including that of Finland.

Mr. Morrison, Australia.—I have been called upon equally unexpectedly with others who have spoken before me to address to you a few words. As one of the representatives of an institution which is still in its infancy. I do not think it would be proper to occupy too much of your time, but I may say that the Australian College of Dentistry, although perhaps in its swaddling-clothes, possesses a constitution which is a very robust one. I might also say that the dentists in Australia are doing their best to maintain the dignity of their profession, and to attain a high educational standard. I feel with my co-delegate, Mr. Bain, that our mission here carries with it a great deal of responsibility, but we are amply compensated by knowing that it also bears with it a corresponding high degree of honor. As one of the representatives of a dental institution which is perhaps the leading one of its kind in Australia, I have only to add my thanks for the privilege of being permitted to address to you these few words, and to express a confident assurance that the results of this conference will bear very good fruit in Australia.

Dr. Guldberg, Norway.—As president of the Commission of Examinations and as Norwegian delegate on the question of dental education, I have the honor of offering you our respectful greetings and best wishes for the success of this important meeting. Dentistry, as is the case with many other institutions of learning in our country, is a recently organized branch of learning, and thanks to its rapid progress and to the earnest efforts of all interested in this specialty we hope soon to attain our purpose. We are happy to form a part of this distinguished assembly to which so many important men bring their valuable contributions. I beg you, Mr. President, to accept our best wishes for the success of these important meetings.

Dr. W. E. Royce (president of the American Dental Society of Europe).—I am pleased to say that the American Dental Society of Europe is very much more ably represented than the delegates which have been appointed to this meeting, but I hope they will not feel I trespass upon their domain if I simply say that that society fully appreciates, possibly more than those who have gained their experience in any one country can appreciate, the importance of the questions which have prompted the promotion of this organization. We most heartily wish for the Federation a long and a successful future.

Addresses were also made by Dr. Frick, of Switzerland, Dr. Artaud, of France, Dr. Guerini, of Italy, and Professor Ehrbehr.

Dr. Sauvez, the secretary-general, read the list of delegates to the Federation meeting.

Dr. Godon then introduced Dr. Brophy, president of the International Commission of Education, to the meeting, and Dr. Brophy took the chair.

INTERNATIONAL COMMISSION OF EDUCATION.

President Brophy then introduced Professor Lindström, as a man whose name was coextensive with medicine and whose teaching in anatomy was known throughout the world.

Professor Lindström.—I have the honor of submitting, at the request of the Swedish delegates to the International Commission of Education, the following short report on the three questions submitted to the consideration of the several delegates by the said Commission:

REPORT OF DR. LINDSTRÖM, OF SWEDEN, ON THE THREE QUESTIONS PROPOSED.

When the Royal Caroline Institute was intrusted by our government with the organization of dental education in this country, namely, the theoretical and practical studies necessary for the education of dentists, we had to solve to the best of our abilities exactly the same questions as are submitted to our discussion by the International Commission of Education.

The first of these questions is framed as follows: "What should be the preliminary requirements for admission into dental schools? There is only one answer to this question,—viz., that if dentistry is accepted as a true specialty of the healing art, the dental candidate should be required to possess the same preliminary education as that required of the medical student. The answer to the third and last question, which reads, "What part of the studies that are taught in medical schools should be pursued by

the dental student?" must be in harmony with the opinion expressed with regard to the first question. It is very plain that the same series of subjects should be studied by the dentist and by the physician, but as the study of medicine in this country requires from nine to ten years, the greater part of which is devoted to the theoretical branches, and as the commission intrusted with the organization of dental education had been asked to limit the length of the course to three years, it became impossible to arrange a plan of studies based upon a common education for both the dentist and the physician.

Following these principles, we organized our dental education five years ago. The curriculum is so arranged that the course is completed in three years. The curriculum embraces a theoretical course during the first year and a practical one during the second and third. Last year some preliminary work on prosthetic technics was introduced in the first year with very satisfactory results. The theoretical course is given by the professors of the medical school, and the practical course is given in a dental clinic especially organized for this purpose and in laboratories of operative dentistry and dental prosthesis, by teachers attached to these institutions.

The theoretical course embraces the following subjects: (1) Chemistry, Metallurgy, and Materia Medica; (2) Anatomy, Histology, and Embryology; (3) Physiology and Medical Physics; (4) General Pathology and Bacteriology.

The subjects of the practical course are as follows: (1) Surgery; (2) Dental Surgery; (3) Obturations; (4) Dental Prosthesis and Orthopædia.

I will now endeavor to answer the other question proposed by the Commission of Education:

Answer: The first and second semesters are almost entirely devoted to the study of anatomy. The course is divided into two parts,—dissection and microscopy. The programme comprises general anatomy, systemic and topographic anatomy of the head and neck, special and comparative anatomy of the teeth and mouth; a general survey of the central nervous system and of the organization of the viscera. The course in histology includes general methods of technique, histology of the cells and tissues and special histology of the teeth and neighboring structures. In the course in embryology, a student takes up at the same time the general development of the organic system and the special development of the skull, face, and teeth. I attach a special degree of importance to the evolution of the maxillæ and the teeth after birth, during the period of development, and during senile atrophy. The study of chemistry should comprise the most important features of inorganic and organic chemistry, especially in their relation to dentistry—metallurgy being included in this branch. The study of physiology refers to those parts which have a direct bearing upon the functions of the oral tissues. Materia medica is taken up in so far as it is related to dentistry. Toxicology, antiseptics, and general and local anesthetics are also included in this group. The course in physiology should comprise the most important points of medical phys-

ics and human physiology, especially the physiology of the buccal cavity and neighboring structures. The course in general pathology and bacteriology comprises the most important elements of general pathology and pathological anatomy, the more important phenomena of local changes in the circulation, and passive and active changes of tissues, and must be accompanied by demonstrations by means of anatomical preparations. The course also deals with the most important points in the science of micro-organisms and special mycology. After having passed the examinations in the subjects here enumerated, the students follow a course in surgery in the hospital during their second year. This course comprises elements of general surgical pathology, diseases of the buccal cavity and neighboring structures, including diseases of the skin and syphilis and aberrations of development. In Sweden, the students, as a rule, take up the study of dentistry at the age of nineteen or twenty, and after studying three or four years, take the professional examination which confers upon them the right to practise. They enter upon the practice of their profession at an age where we may properly presume that they have a serious conception of their duties as practitioners of dentistry.

The President.—Before leaving home I caused the address that I am about to deliver to be printed in French, German, and Swedish. On arriving at Stockholm I found that the Swedish translation was so very poor that it would be misleading, but the French and German are fairly good, though errors are to be found in both.

The report of Dr. Roy, the secretary-general of the International Commission of Education, was read in his absence by Professor Martinier, as follows:

REPORT OF DR. MAURICE ROY ON THE THREE QUESTIONS PROPOSED BY THE
INTERNATIONAL COMMISSION OF EDUCATION.

The three propositions which I have the honor to submit to the International Commission of Education of the International Dental Federation in answer to the three questions set forth last year at our London-Cambridge session were first discussed and adopted by the Paris School of Dentistry, afterwards by the commission of education of the National Dental Federation, and lastly by the whole French National Federation at their session of May 25, 1902. I have therefore the advantage of presenting the present report both in my own name and in that of the French National Dental Federation, which represents all the French dental associations, with the exception of two small provincial groups.

With respect to this I take the liberty of drawing your attention to an important point, which is that if, in their deliberations, the International Dental Federation would give, in addition to the personal opinion of their members, that of the national federation, it would afford a larger basis to the discussions of the international assembly. But for that pur-

pose it would be necessary that national dental federations should be organized in every country, which, unfortunately, is not the case. For that reason it is desirable that the Executive Committee of the International Dental Federation should employ all its influence to constitute national federations in all those countries that have representatives among us. It is also desirable that, on their side, these representatives should, each in his respective country, take the initiative in organizations that are so important for the future of the International Dental Federation and for the interests of those whom it proposes to champion.

First Question.—"What are the preliminary studies to be required of students before beginning their professional education?"

The necessity of a sufficient general education is admitted by every one, and I think it needless to insist thereon. What we have more particularly to consider is, (1) the extent of such general education; and (2) the age at which it should finish.

These two considerations are, in reality, absolutely inseparable. For if the question of age had not to be considered, there would be no reason why one should limit the general education of the dentist, the general culture of a man being never too great, no matter to what branch of human industry he may be called. But for the dentist a limiting consideration here interposes,—that is, the necessity of his beginning at an early period of life the study of his profession properly so called. This point was made remarkably evident last year at Cambridge by our Philadelphia colleague, Dr. Kirk, and his opinion was supported by the then president, Sir Michael Foster, an eminent physiologist, who summed up in the following short proposition the ideas of our fellow member: "The mind ages slowly and can be educated at even a late period of life, but the body grows quickly old and it is necessary to train it while young."

For these reasons we think that the studies relating to general culture ought not to be prolonged beyond the age of sixteen; not that we think it necessary to commence dental studies at that age, but because we consider that the education of the future dentist should then assume a special character in order to prepare him progressively for dental studies properly so called, beginning thus the formation of the *conc of education* so admirably described by Sir Michael Foster.

What is to be the programme of these studies of general culture? It will evidently be variable according to the country and the educational organization; it ought, nevertheless, to form a complete whole, quite homogeneous, allowing a youth of sixteen to have a general idea of the fundamental bases of human knowledge.

This being recognized as regards general culture, are the studies of the future student of dentistry to be confined solely to this general education, or are they to be already directed to the special object he has to pursue?

In order to solve this question, we must first put another, on the solution of which will depend the answer to the first: What qualifications are necessary to make a dentist? Everybody has not the aptitudes necessary for a dentist, who should possess, besides an intelligence sufficient to

assimilate the varied knowledge necessary for the study of our art, enough manual skill to acquire in that time the dexterity required in the execution of the diversified labors of operative dentistry and prosthesis.

Now, there are certain individuals who, though endowed with intelligence in every other respect, are naturally so awkward as to render them incapable of acquiring even medium skill in the practice of our art. It appears, therefore, necessary, according to the principle laid down by Mr. Cunningham, to make sure beforehand that the future student of dentistry possesses this indispensable minimum of manual skill. For this reason it would be advisable to require from the latter a general manual instruction that would enable one to form an opinion as to his aptitude and at the same time would cause him to acquire, from this point of view, the general principles the application of which he would meet with later on. It is also advisable that before entering upon his professional instruction the student of dentistry should possess general scientific notions sufficient to follow profitably the special courses of lectures, or otherwise these would have to be kept at too elementary a level.

It is to these two orders of instruction—gradual manual instruction on the one hand, general and elementary scientific instruction on the other—that the preliminary studies of the student of dentistry must be devoted from sixteen to eighteen, the normal age of admission to the school of dentistry. To these must be added the study of two living languages, the necessity of which has been felt at meetings like these we hold annually.

These different considerations have led us to propose to you to adopt, for the first question put by the International Dental Federation, the following answer, which is the reproduction of a wish expressed by the Congress of 1900:

The preliminary education necessary for the student of dentistry before being admitted to follow his professional education must comprise—

- (1) A literary education with a knowledge of two living languages.
- (2) An elementary knowledge of sciences.
- (3) Manual instruction.

On these different orders of instruction we cannot seek for better inspiration than in the remarkable words of Sir Michael Foster when he speaks of the general basis on which all special education must rest. The broad basis, he says, must be "the discipline of the school; that is, the boy's school. I say the discipline rather than the learning of the school, for the arm of the school-master should be in all cases the formation of the mind,—the setting of the instrument, not the filling of the bottle. The growth of habits of accuracy, of intentness, and of alertness, this rather than the gathering of mere knowledge of facts is the proper heritage of the school, and for the attainment of these habits it matters not so much what the boy is taught as how he is taught."

Second Question.—"In what are dental studies to consist, how long ought they to last, and what should be the order of the programme?"

This question is incontestably the most important of all that can be put, for it places more particularly at variance the two principles which

contend for the direction of dental studies,—the odontologic principle and the stomatologic principle. It is not possible to discuss here these two theories; it has been done too widely to make it necessary to revert to them, and time would be lacking, as the subject is one that admits of long developments. Nevertheless, there are a certain number of points that must be settled, as they form the basis on which we must rely in order to solve the question stated above.

It is incontestable that a man's education is never too extensive; doubtless all knowledge is useful, but, as Sir Michael Foster, in his address at Cambridge, admirably remarks, "The power of the human mind to acquire and preserve knowledge is limited. On the other hand, the development of human knowledge is such that it is no longer possible for a man to be able, like Pic de la Mirandole, to descant *de omni scibili et quibusdam aliis*, and that it becomes indispensable for a man to limit himself if he wants to acquire, not a superficial acquaintance, but a profound knowledge of any branch of science whatsoever. As Dr. Godon remarks, quoting Herbert Spencer, in his excellent address at Cambridge, 'We that have but span-long lives' must ever bear in mind our limited time for acquisition."

The question of how long studies ought to last is therefore of extreme importance, as argued last year by Dr. Godon and by myself in the discussions of the International Federation. Their duration must be perforce limited, and four or five years seems to be a maximum that cannot be exceeded. It would be impossible to require from dentists studies analogous to those of doctors of medicine, since it is impossible, as no one sufficiently acquainted with the facts will deny, in four or five years to make at once a doctor and a dentist. It is advisable therefore to make a rational use of the maximum time to be devoted to study, so as to allow of students of dentistry acquiring gradually the knowledge requisite for the exercise of their profession.

Dental studies come under two heads: on the one hand scientific and medical studies, on the other technical studies. How are they to be divided?

We consider it indispensable to give a very notable pre-eminence to technical studies, and particularly to practical work. Dental therapeutics and its two corollaries, operative dentistry and prosthesis, admit of a very important manual part, necessitating a long apprenticeship both of the eye and of the hand, hence the necessity of devoting a considerable part of the hours allotted to study to practical work (prosthesis and operative dentistry).

According to the calculations made by Dr. Godon in his thesis and previously by myself in my report to the Congress of 1900, a proportion of one-fifth of the hours of study devoted to the scientific and medical part of dental instruction appears to be sufficient. We think, therefore, that this proportion may be accepted as a basis on which the programme of this part of dental instruction should be established.

Is it desirable to divide the teaching as is done in certain foreign countries—in Switzerland, for instance, where one year is devoted to the

study of physical and natural sciences, one year to medical studies, and a year and a half to dental studies? We are not of that opinion. We have already said that technical studies should be of long duration, particularly as regards practical work; now, in order that the student may profit by the latter, it is necessary that he should receive concurrently theoretical technical instruction without prejudice to general scientific and medical instruction. From the above facts the necessity follows of organizing different courses of lectures, so that medical and scientific instruction and technical instruction may be given simultaneously. The distribution alone should differ; scientific and medical lectures should predominate in the first years and technical lectures in the last. All the courses of lectures, especially the technical ones, should naturally be graduated according to the years of study.

It is desirable that a particular regulation should be made applying to doctors of medicine who intend to practise dentistry; and, conformably to the wish expressed by the Congress of 1900, it should be obligatory for this category of students to attend for two years the classes of a school of dentistry. It would, however, be necessary to draw up a programme of practical work for these students so as to allow of their going gradually through the programme of practical work which normally extends over four years.

These diverse considerations being settled, we propose to you to adopt the following answer to the second question above stated:

(1) Dental studies comprise a scientific and medical part, and a technical part.

(2) Their duration must be at least four years.

(3) These studies must be organized conformably to a parallel method for all the classes—scientific and medical instruction and technical instruction simultaneously.

(4) It must be obligatory on medical graduates who purpose practising the art of dentistry to attend, for at least two years, the lectures of a school of dentistry.

Third Question.—"What branch of the studies, as taught in medical schools, must the student of dentistry follow?"

After what we have just said on the preceding question, the answer to this last question does not admit of being extended. In the first place we reject completely, for reasons that have been often stated and of which a few are here recalled, the assimilation of dental studies to medical studies and consequently the obligation of complete medical studies in order to practise the art of dentistry.

Irrespective of this absolute view of the question, is there an advantage for students of dentistry to follow certain teachings given in schools of medicine? We think not. As we have already said in our report on instruction, if it be indispensable that the student of dentistry should have a knowledge of anatomy, physiology, chemistry, and physics, it is not indispensable that his knowledge of these subjects should be as extensive as if he were destined to practise medicine or to take a degree in physical sciences. In the faculties of medicine lectures are given with a

view to medical studies; it follows, therefore, that students of dentistry, having but a limited time to devote to them, can profit only to a limited extent by lectures of a higher order than is strictly necessary for their later studies, or else, should they devote sufficient time to them, unless their studies be prolonged it must be to the detriment of their professional instruction.

I am happy to find that on this point my opinion coincides with that of a man of intellect, Dr. Joseph Griffiths, professor of surgery at the University of Cambridge. In the memorable session of the International Dental Federation at Cambridge Dr. Joseph Griffiths, after having compared the respective wants of the doctor and the dentist, said, in his remarkable discourse, "Can this education of a dentist be carried on side by side with that of the medical men? is the question of practical importance. I would unhesitatingly answer. No. The anatomist may train either, but he cannot train both together without giving one much more than he requires and not paying enough attention to the other. It is much the same with physiology. Therefore, I say their courses should be separate, and so arranged as to serve the right end."

The conclusion we arrive at is that if dental science is an autonomous science, then dental instruction must be autonomous instruction.

There remain, however, two particular points to be examined: dissection on the one hand, medical and surgical clinics on the other.

As regards dissection, dental schools have a difficulty to contend with,—namely, that of procuring corpses, many considerations interposing in many countries with respect to this. In countries where this difficulty exists it is absolutely necessary to have recourse to medical schools or to hospitals, but subject to one peremptory condition,—namely, that lectures shall be given there exclusively for the use of dentists, the *locale* alone being changed, the spirit of the teaching remaining the same.

With respect to medical and surgical clinics the question is easier to solve. We must bear in mind that with very rare exceptions—and then they are generally assisted by the doctor in attendance—dentists have only to attend patients who are not confined to their beds. Consequently what they have an interest in seeing is patients coming and going like those who present themselves at the consultations for out-door patients. It is therefore easy to have a consultation room annexed to each school, in order to supply this want; but, in default of such a plan, it will be necessary to apply to the hospitals, bearing in mind, as for dissection, that the examination of patients be made strictly with a view to the special teaching to be followed by students of dentistry.

We therefore propose to you, in answer to the third question, to adopt the following resolution:

"All the studies of students of dentistry must take place exclusively in schools of dentistry, except that of dissection in cases where it is impossible to procure dead bodies, but subject to the condition that the lectures be given exclusively for the use of such students."

Such are the reasons which have led us to adopt the three resolutions which I have the honor to submit for the approval of the International

Dental Federation in the name of the French National Dental Federation, which resolutions I reproduce below:

First resolution:

The preliminary education necessary for the student of dentistry before being admitted to follow his professional education must comprise—

- (1) A literary education with a knowledge of two living languages.
- (2) An elementary knowledge of sciences.
- (3) Manual instruction.

Second resolution:

(1) Dental studies comprise a scientific and medical part and a technical part.

(2) Their duration is at least four years.

(3) These studies must be organized conformably to a parallel method for all the classes: scientific and medical instruction and technical instruction simultaneously.

(4) It must be obligatory on medical graduates who purpose practising the art of dentistry to attend, for at least two years, the lectures of a school of dentistry.

Third resolution:

All the studies of students of dentistry must take place exclusively in schools of dentistry, except that of dissection in cases where it is impossible to procure dead bodies, but subject to the condition that the lectures be given exclusively for the use of such students.

Dr. Bogue wished to know whether the report had been printed in English?

Dr. Godon said that the committee by great efforts had had the reports put into English and printed, at some expense, and a copy had been sent to every member. There were very few remaining, and it was impossible to distribute them to all present.

Dr. Holly Smith wished to have a discussion on Dr. Brophy's paper without any extraneous matter being introduced.

The President (Dr. Brophy) said he could clear up the whole matter by stating that the report read by the Secretary was in English in his hands, and it could be read in English if necessary.

(To be continued.)

Editorial.

ERRORS IN EXPRESSION AND PRACTICE.

DENTISTRY in its origin naturally absorbed many crude ideas, and these have been crystallized into a nomenclature of varied character, obscure meaning, and, oftentimes, misleading in the brief statement of supposed facts. This has been from time to time taken in hand by societies and committees, and attempts have been made to improve ideas by correcting the language in which they have been expressed. This has only been partially successful, and the generally laudable efforts have practically died with the publishing of the reports. This is to be regretted; but the result should have been expected, for the mental habit of expression is one of the strongest and most persistent in human experience. To expect change rapidly is a vain hope. The absorption must come slowly; but because this is true it does not afford sufficient reason for casting aside this and cognate subjects.

The reader of dental literature must be constantly surprised by statements in physiology, pathology, and kindred subjects that either express great carelessness or absolute lack of knowledge; and notwithstanding the higher standard of dental education these seem to increase rather than diminish.

The writer was impressed with the truth of the foregoing statement in reading a paper written by a prominent worker in the dental ranks, where he made use of the expression, "A certain amount of healing inflammation." Exactly what was meant by this it is difficult to determine. Inflammation is not a healing process, but is "the succession of changes which occur in a living tissue, when it is injured, provided that the injury is not of such degree as at once to destroy its structure and vitality." It is, therefore, but a symptom of a series of pathological phenomena, beginning with hyperæmia, and this continued means stagnation of circulation, migration of leucocytes, and blood-plasma, invasion of micro-organisms, liquefaction of tissue,—in a word, an abscess. When this result is taken into consideration, the error of expression becomes apparent. That healing eventually results is to be ex-

pected. The removal of this original cause of the inflammation can, however, lead to a return to conditions approximating normal. This is illustrated in the pathological condition known as alveolar abscess. The use of this term is a wrong use of words, yet it would be a waste of effort to criticise the name. It has become fixed in the nomenclature of the profession; but while this is true, a more misleading term has rarely been conceived or adopted. It is needless to state that the inflammation thus described, although pathologically in intimate relation to the process, has no more connection with that than the cement, both being equally affected through their united investing membranes.

In describing this circumscribed abscess writers frequently express themselves in this manner, "Pus and fluids pass out into the *apical space*." This is evidently the result of thoughtless expression, for no one could be ignorant of the fact that there is no such thing as a normal space surrounding the apices of roots; but while it may be thoughtlessness, and not ignorance, it leads equally to a misconception of the anatomy of the jaw as far as implantation of teeth is concerned.

A term that has strangely come into common use is "pericemental abscess." This is meant to apply to an abscess the origin of which is supposed to have been produced through uric acid irritation. Without attempting to discuss the pathological relations of this supposed abscess, it may be said to exhibit no marked difference from the aforementioned form of abscess. Equally with this it has its origin in inflammation of the pericementum and periosteum. Hence the absurdity of giving this name to a condition of uncertain pathology, but in nowise differing from that described, inasmuch as both originate in the pericementum.

The readers of dental periodicals have been surfeited with discussions on "Immediate Root-Filling." If the advocates of this method are to be believed, it does not matter whether the operator has a case of incipient abscess or simply a hyperæmia. In any event proceed to fill at once and all things will end satisfactorily. Indeed, one writer expressed recently, "That a simple discharge of pus, *which can be stopped*, is no bar to the immediate method." If effort be made to reduce the inflammation and cause a stoppage in the formation of pus, it is certainly *not* an immediate method of filling, for this treatment to be successful requires time. If the writer means that he places a filling in a canal with septic

conditions and a primary abscess at the apex of the root, he takes risks that eminently entitle him to a suit for malpractice. What can be thought of this paragraph? "How can it be possible . . . that practitioners continue at this late day to treat putrescent root-canals? and if so, why? Do they not know that immediate root-filling in just such cases has been practised successfully for at least twenty years?" That root-filling can be made immediate requires no argument, but when septic conditions exist either in the canal or in the membrane surrounding the root, to fill immediately admits of no excuse save and except a profound ignorance of the pathology of the subject and the resulting sequellæ.

In the treatment of pericementitis the average dental operator confines himself entirely to counterirritation. Whether this be the proper and only course of action cannot be discussed here, but if limited to this simple effort it should be accomplished with some conception of what is required to produce the best results. The philosophy of this process is rarely, if ever, considered. Will the dentist hesitate to use agents that produce vespication of the tissue? Is it, indeed, taken into consideration? It is surmised that the general opinion is that this is the result most desired. The dentist is not so much to blame for this, as it has been part of medical teaching. The importance of keeping the nerves in full activity has not been considered in this connection, and yet upon the sensory nerves must depend the creation of an artificial hyperæmia, the basic principle upon which this counterirritation is founded. It is fallacy, therefore, to make use of such vesicants as cantharides and mustard unless carefully watched, and it is equally an error to make use of a paralyzer, as the tincture of aconite root, thus benumbing the nerves upon which the local increase of the blood current depends.

The dental profession has had it so frequently ingrained in its mental constitution that serumal calculi are the cause of pyorrhœa alveolaris that it would be more than waste energy to attempt to combat it; yet no greater error has ever been implanted upon the dental mind. Calculus is the secondary product and pus organisms are primarily the active irritants.

The dental world hears much of "blind abscess." What is meant by this it is difficult to determine, as there is no such pathological condition existing. If it is meant that an abscess may possibly exist somewhere without an outlet,—a fistula,—such may

have a place in general pathology, but not in dental practice. A deep-seated abscess requiring surgical attention might be so classified. An abscess means the formation of pus, and the tendency and function of pus, if it have a function, is to find an exit in the direction of least resistance. This blind-abscess term should have no place in dental nomenclature.

In connection with this is the oft-repeated expression of "curing alveolar abscess." That a root involved in all the conditions connected with an abscess can ever be cured except by a surgical operation is another of those impossible ideas fastened upon the dental mind. Abscess means necrosis of a portion of the cementum, and this, which simulates the sequestrum of necrotic bone, is always a focus of irritation and a perpetual source of offence.

As dentistry progresses new fallacies take the place of, or rather are added to, the old, and of these we will probably never see the end; but whether old or new, they tend to lead the young practitioner into troublesome paths of practice.

In this category may be classed the filling of children's teeth with gold, not warranted with our present histological knowledge; and connected with this is the older practice of always filling with gold without regard to the size of the cavity or the time required to complete the work. This is not now regarded as the best practice, and it is time the professional adoration of Varney and Webb had ceased. In their day they were notable examples of honest work and are worthy of our continued remembrance, but their methods are not adapted, as a whole, to the present advanced thought. The world needs to know the best way to save teeth with the least expenditure of time, money, and suffering to the patient.

This article has only glanced at a few of the errors which in the estimation of the writer mar expression and practice. Each writer and speaker can do much to eliminate these by a careful attention to the formation of ideas into words in writing and speaking. No one, least of all the writer, is free from these defects, and hence it becomes a universal duty to help save the dental profession from a seeming appearance of ignorance when such does not in reality exist.

Incidents of Practice.

OIL OF CLOVES.—W. A. Briggs, M.D., of Sacramento, Cal., reports in *American Medicine*, January 3, 1903, an extended experience with clove oil as a disinfectant for the hands of the surgeon, obstetrician, and nurse, and also for the operative field. He has used it in varying strength, with a diluent of olive or other indifferent oil—from pure to twenty per cent.—as a dressing for lacerated, punctured, incised, and contused wounds, and for the umbilical cord; all with marked success and satisfaction. He sums up its advantages,—viz., 1. Practically non-toxic. 2. Locally distinctly analgesic and powerfully antiseptic. 3. A quick, ready, and simple means of accomplishing results.

NOTE.—Its valuable properties have perhaps been overlooked, undervalued, or forgotten by many in dental practice.—H.

OBSERVATION OF CASE OF RESORPTION REPORTED ON PAGE 633 OF THE INTERNATIONAL DENTAL JOURNAL FOR 1902.—On presentation, November, 1902, the pulp continued vital with a reaction of $-56 + 130$. This being in close relation with the normal rate of the sound teeth, namely, $-58 + 130$, it may be considered that the pulp gives indication of continuance of vitality.

The peculiar condition of the gingiva at the lingual aspect had nearly disappeared.—L. J.

TRAUMATIC IMPACTION OF BOTH DECIDUOUS CENTRALS.—By the fall of a child of two and a half years, March 3, 1897, the centrals were driven into the adjacent tissues so far that the incisal edges scarcely appeared. Within an hour ether was administered, when the teeth were drawn into position, ligated to each other and to the laterals. Tincture calendula one to four of water was sprayed over the parts and mild disinfection was maintained for two days. The teeth became firmly attached in a short time and maintained indications of having living pulps. This condition was confirmed

at the removal on their loosening in December of 1899. The absorption of the roots was complete, leaving the residue of the living pulps in the caps of enamel. The permanent teeth did not appear until October, 1900, at the age of six years.—L. J.

Current News.

INSTITUTE OF DENTAL PEDAGOGICS.

At the recent meeting of the Institute of Dental Pedagogics, held in Chicago, December 29, 30, and 31, 1902, the following officers were elected for the ensuing year: President, J. D. Patterson, Kansas City, Mo.; Vice-President, H. R. Tileston, Louisville, Ky.; Secretary-Treasurer, W. Earl Willmott, Toronto.

Executive Committee.—W. H. Whitslar, Cleveland, Ohio; D. R. Stubblefield, Nashville, Tenn.; R. H. Nones, Philadelphia, Pa.

The next meeting will be held at Buffalo, December, 29, 30, and 31, 1903.

Those having new teaching appliances which they wish to bring before the Institute will communicate with Dr. William C. Foster, Baltimore, or Dr. L. S. Tenney, Chicago.

THE NEW YORK INSTITUTE OF STOMATOLOGY.

THE annual meeting of The New York Institute of Stomatology was held December 2, 1902. The following officers were elected for 1903: President, Dr. J. Morgan Howe; Vice-President, Dr. A. H. Brockway; Recording Secretary, Dr. F. Milton Smith; Corresponding Secretary, Dr. George A. Wilson; Treasurer, Dr. J. Adams Bishop; Editor, Dr. Fred. L. Bogue; Curator, Dr. J. G. Palmer.

Executive Committee.—Dr. C. F. Allan, Chairman; Dr. C. O. Kimball, Dr. S. E. Davenport.

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No. 4.

Original Communications.¹

SOME OF THE CAUSES OF IRREGULAR TEETH, WITH
SUGGESTIONS AS TO PREVENTIVE TREATMENT
OR EARLY CURE.²

BY E. A. BOGUE, M.D., D.D.S.

SINCE dentistry has been recognized in this country efforts have been made to correct irregularities in the positions of the teeth.

Some of these efforts have been successful, some have been failures; but why success has been attained in one case and failure has resulted in another does not seem to have been clearly explained in any of the treatises thus far written on the subject.

It is necessary therefore that we should look into the causes of the irregularities, before we can understand the principles that underlie their successful cure.

I use the word *cure* in its original sense,—care, direction, management.

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read before The New York Institute of Stomatology, March 3, 1903.

It must be remembered that we are formed in two halves, and that those two halves unite to form the perfect creature.

During the processes of development, a very slight cause may produce as effect a wide deviation from the typical form.

For example, the pressure of the lower jaw of an infant "in utero" is sufficient if it closes beneath and into the upper jaw to form a cleft in the hard palate and to widely separate the two halves of the superior maxillary.

The proof of this is, according to Dr. Brophy, that when the separated halves are brought together by his operation for cleft palate, the upper jaw is found to be in proper relation to the lower, and the eruption of the teeth takes place nearly along normal lines.

When the question, What are normal lines? is presented, we are confronted with Dr. Cryer's conclusion in his recent work,—that "the idea of an unvarying typical form in anatomy is not correct." That if a typical bone could be found or devised and a thousand real ones examined, it is possible, though doubtful, that in the thousand bones two or three could be found which exactly corresponded with the typical bone.

When, therefore, we undertake to study the human teeth and to understand what are normal teeth, in their normal positions and relations each to the other, we have to examine large numbers of teeth, or models of them, that are presumably as accurate in their formation and arrangement as can be found.

I shall present now but one specimen, that represents, as far as may be, a perfect denture.

The main characteristics of the so-called normal denture are, however, all there, as far as they are required for our purpose this evening.

The main curves, which have to do with the application of the greatest degree of force in mastication without injury to these organs, are there. The inclination towards the tongue of the lower molars, in order to properly cusp and antagonize with the upper molars, which are implanted in a jaw smaller than the lower, is there as well, and also the outward incline of these upper molars.

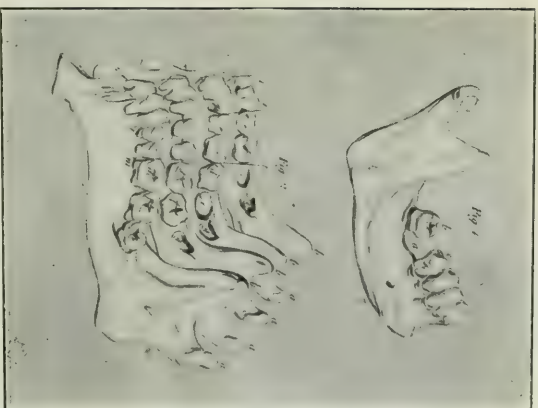
The curves from before backward are distinctly shown, and all these curves are of practical utility considering the form and construction of the teeth.

Blainville (Owen, page 515), in his "Osteography of Vertebrate Animals," calls the bicuspids the "pre-molars," the first permanent

FIG. 1.

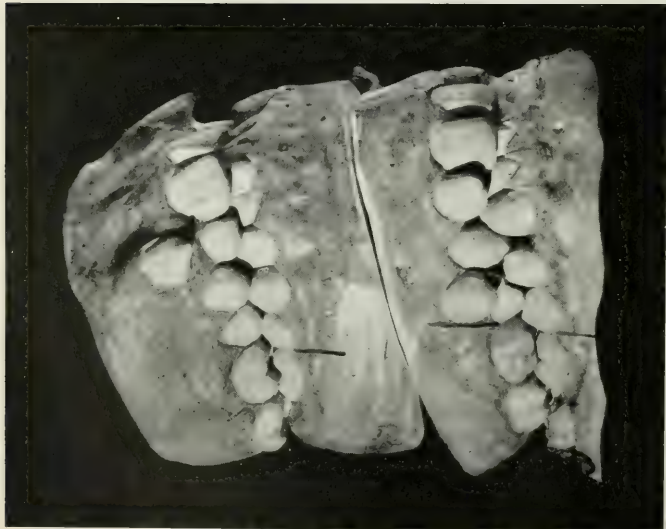


Lower model, perfect occlusion. Upper model shows a slight deviation consisting in the advance of the upper molar one-half of one cusp, resulting as is shown. The cuspids, developing after the bicuspids, being crowded out of their place, are left hanging in the air, giving an expression of mild ferocity.



Photograph of a leaf from the book of John Hunter, 1778, showing the region in which the greatest amount of growth takes place from childhood to adult age. Also showing part of the results from the loss of a molar. Nothing new, yet valuable.

FIG. 2.



Again shows two more cases of anteriorly dislocated upper molars; the result being in the upper case the very common deformity of prominent cusps, which are thrown entirely out of line, a more pronounced case than the one last shown. The lower model shows the first upper bicuspid thrown out of line on the labial side, while the cuspid occupies the place that should have been occupied by the first bicuspid.

FIG. 3.



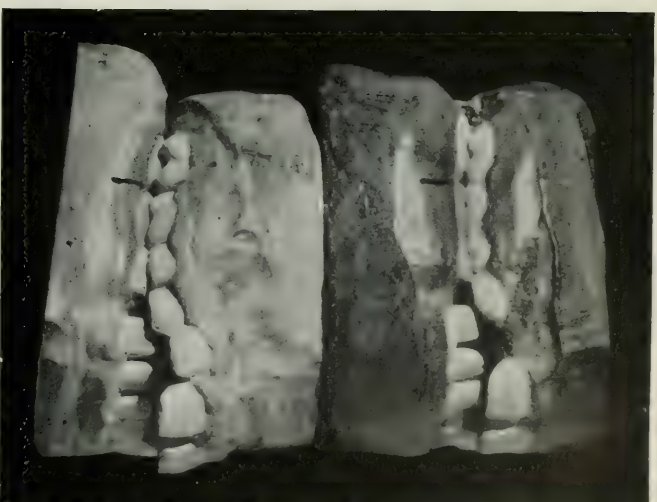
Showing progressively the effects of a dislocated molar. These two models show the *lower* molar forward of its proper position. The lower model is a case of unilateral irregularity, bringing the lower molars on the right hand almost outside the arch. The other model is bilateral anterior deviation of lower molar.

Fig. 4.



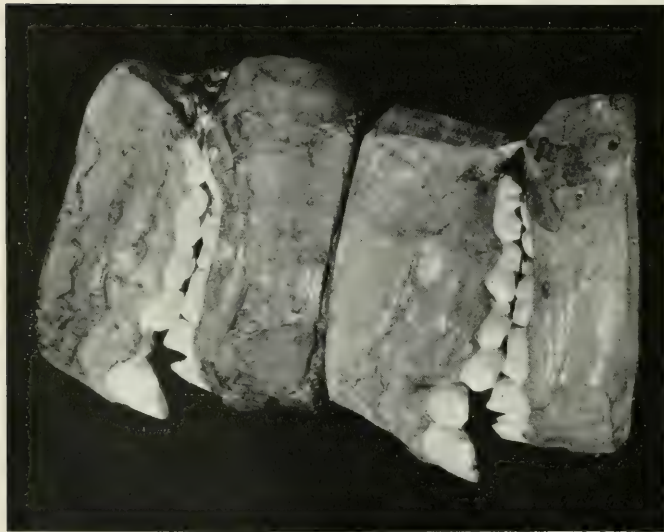
Right and left sides of skull of child about six years old, showing first permanent molar erupting. On right side, indications are that occlusion will be normal. Left side indications are that the eruption of upper molar will be anterior to mesial cusp, causing unilateral displacement. This skull is also remarkable in that it shows in the second permanent molars, that are not due to erupt for about six years, distinct cavities that are visible in the buccal sides of both teeth in the picture. These cavities are formed by the failure of the enamel plates to coalesce in the formative processes.

Fig. 5.



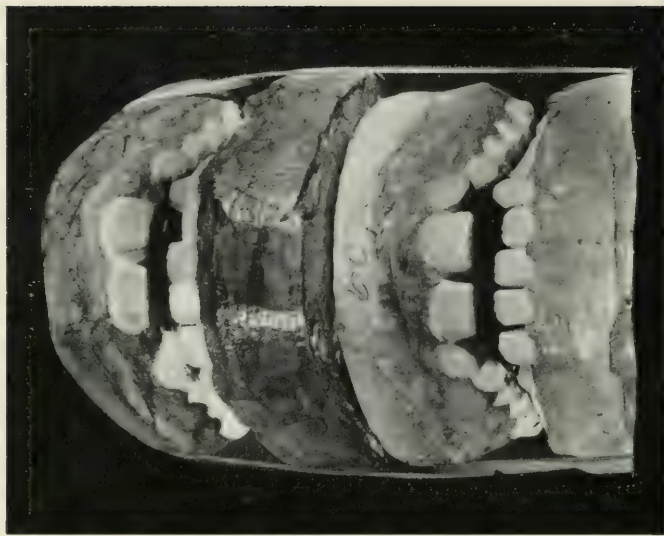
Master N. G. Two models. Top one seven and one-half years. Bottom one, ten months later. Unilateral displacement of upper first permanent molar, and considerable anterior projection of upper incisors.

FIG. 6.



Master N. G. Same mouth, same dates, left side. Permanent molars in regular proper occlusion. Prognathous upper teeth. Flattened lower incisal region. This condition caused by the acquired habit of drawing the lower lip in, thus flattening the lower arch and closing the teeth against the lip, pressing the upper incisors outward.

FIG. 7.



Master N. G. Same mouth, same ages, front views. Upper model at seven and one-half years of age; shows good occlusion of temporary molars. Lower model, ten months later; shows a failure in contact of the molars and protrusion of upper incisors from causes mentioned in the paper.

molar the principal molar, and the other two teeth back of this he calls post-molars.

He next points out that “another characteristic in the principal molar of man is its position, being implanted below the root of the zygomatic process of the upper jaw.”

It is so largely with this *principal molar* that we have to do this evening, that I beg to draw your attention carefully to it.

As the lower jaw develops first, and usually the lower teeth also, we will begin by noticing that the normal lower first molar has upon its outer or buccal side three cusps or tuberosities. Upon the inner or lingual side it has two.

The upper molar has two on either side. But in the normal position of these teeth, when closed, the anterior buccal cusp of the upper molar and the anterior lingual cusp sit astride of the outer ridge of the lower first molar just posterior to, and nicely fitting in with, the anterior buccal cusp of the lower molar.

When at their eruption these teeth come into just this position on both sides of the mouth, we may be certain that there will be no serious irregularity back of the cuspid teeth. But when from any cause these two principal molars erupt out of line with each other, —that is to say, with the upper molar too far forward of the position just described, or too far backward, or too far on the lingual or buccal side for the two teeth to come accurately into the position described,—irregularity of some sort is absolutely certain.

The reason for this is not very far to seek.

The teeth of each individual are formed of a size and type adapted to that individual.

There is just room enough in each skull for the typical jaw belonging to that skull to develop, and to erupt the typical teeth for that jaw.

But if, during infancy or early childhood, some slight cause for a deviation obtrudes itself, and continues for a little time to act, with only as much force as might be exerted by a single hair, there is sure to be a deviation from the typical form, or position, or both.

If now either of the principal molars (which, antagonizing each other, stand exactly at the middle, and bottom, of the curve extending from the top of the lower cuspids to the top of the wisdom-tooth below) is thrown out of position, the remainder of the teeth, anterior to the dislocated one, will not have the room in which to erupt.

For example, suppose the upper molar occludes with the lower, a little in advance of its proper position.

There must be room between the anterior surface of the first permanent molar and the spot where the cuspid should come down for the two bicuspid.

If there is not room, the forward pressure of the erupting molar will crowd the bicuspid in some direction, inevitably; either forward, making protrusion of the anterior part of the jaw, or laterally, towards the tongue or the cheek, breaking the arch and exhibiting irregular bicuspid which do not cusp.

The same condition of things is true if, by chance, the *lower* first molar erupts out of position.

To you who have studied occlusion I hardly need to say that I regard the replacement and retention of the first permanent molars into their proper and normal positions in relation to each other, should they be found developing out of place, at five and a half to seven years of age, just as essential as the replacement of the head of the femur into the acetabulum, before five years of age, should it be found dislocated.

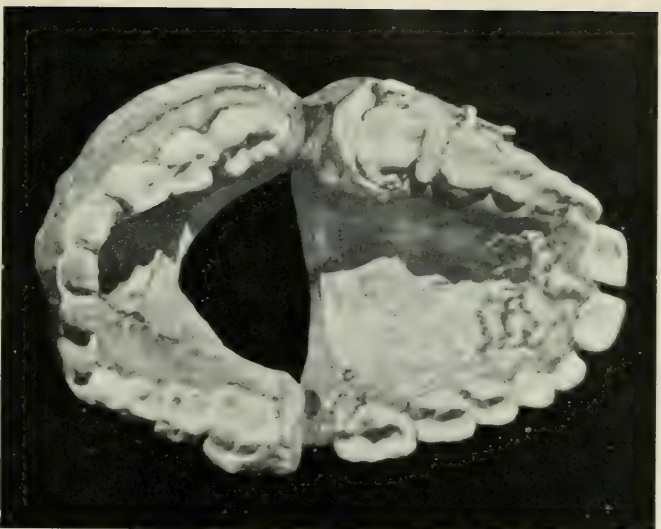
What difference is there between a dislocated femur and a dislocated tooth? Both lead to serious deformity. The one involves limping on the pathway of life, being a cripple; the other involves limping through one's victuals, being a dental cripple; the proper function of mastication is not fulfilled; the results no one can foresee, but we know they are evil; always ugly, sometimes repulsive; sometimes fatal.

Most of these deformities may be at this tender age far more easily corrected than the dislocated hip. It may need a hospital where the patient is kept a month or two; sometimes it can be done in a few days, without disturbing, for more than a few minutes at a time, the usual avocations of the child.

But it can be done, and if done during this plastic age it is done painlessly, quickly, and, if under the eye of one who comprehends the situation and who understands "the total depravity of inanimate things" (children included), the teeth can be guided into place and held there.

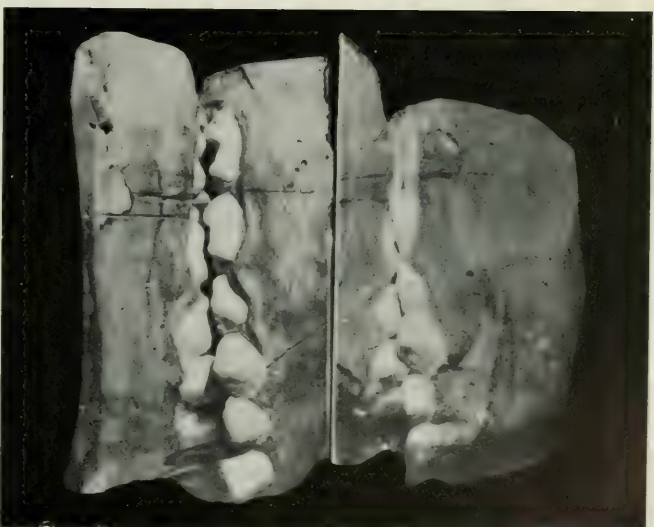
This gives opportunity for development to go on in the centre of the region occupied by the two jaws; for additions to be made to the skull, to the brain occupying it, to the face, which needs the added dignity given by growth, or, as we say, by years, and it

FIG. 8.



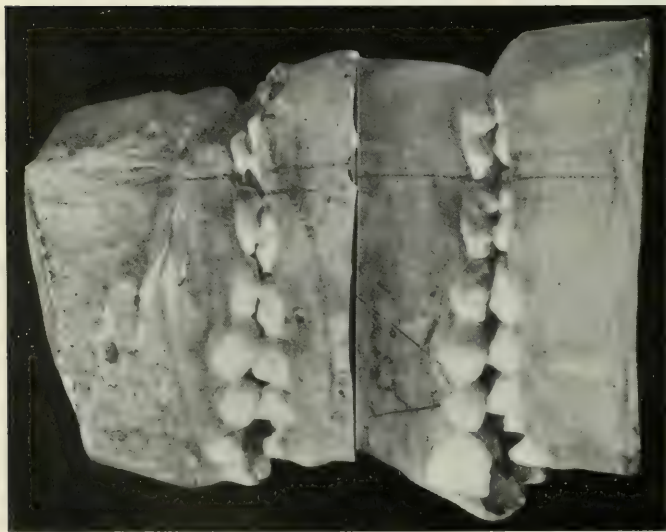
Master N. G. Same mouth, open, showing proclination of upper incisors, flattening of lower arch and fixture arranged to push back into occlusion, if possible, the right permanent molar.

FIG. 9.



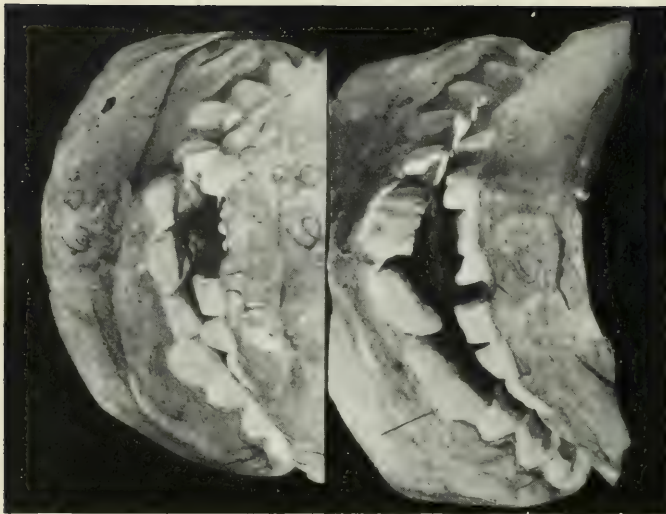
Eleanor G. Upper model taken at six years of age, showing right side. First permanent molars in proper occlusion. Teeth slightly above the gum that pencil-marks have been made to show the anterior side of lower molar as well as upper molar. Lower model, same mouth, ten months later. Upper molar advanced until the tops of the cusps antagonize instead of the cusps fitting into the sulci. Permanent incisors proclonous.

FIG. 10.



Eleanor G. Same mouth, left side. Upper model, six years of age, permanent molars in perfect occlusion; anterior side of lower molar indicated by forward pencil-mark. Anterior side of upper molar also indicated. All the teeth cusping properly and in good positions. Lower model ten months later, showing the "bite jumped," *i.e.*, all the upper teeth one cusp in advance of where they were ten months previously; incisors protruding in a V-shape.

FIG. 11.



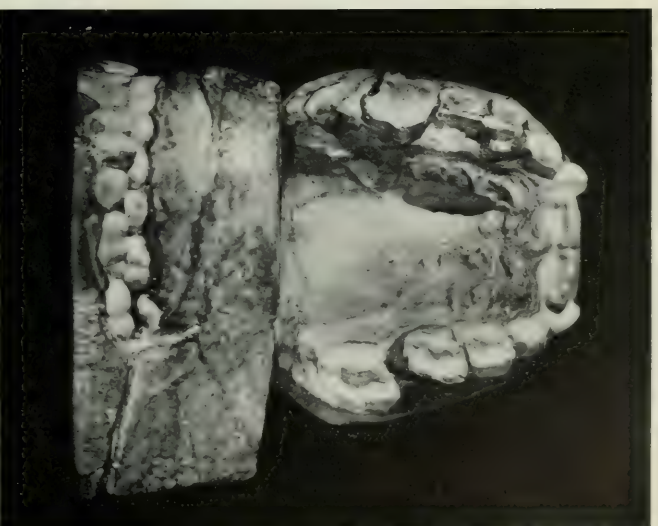
Eleanor G. Same mouth as preceding slides, tilted upward to show articulation. Upper one at six years of age, showing proper occlusion. Lower one, ten months later, shows left side well occluded, right side mal-occluded; in fact, no occlusion at all, but antagonism on the ends of the cusps. Teeth becoming more and more misplaced.

Fig. 12.



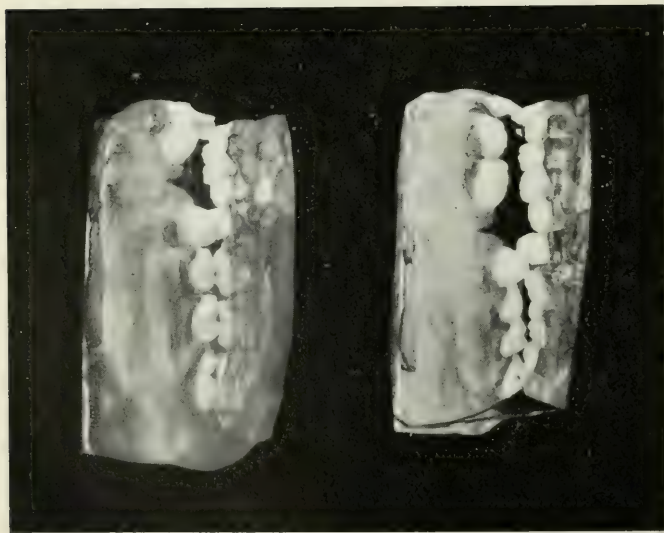
Carol P., about eight years of age. Lower model represents the case as it was presented. Upper molar antagonizing on cusps of lower. Relatives distinctly averse to any corrective measures. Upper model, same case, two weeks later; space having been formed by tape wedges alone; proper and correct occlusion between upper and lower molars.

Fig. 13.



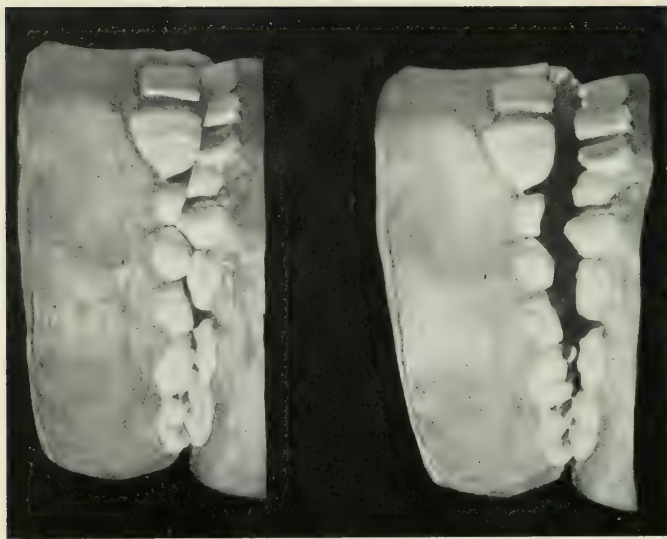
Carol P. Upper model same as last shown, with a ring and metallic knuckle on left temporary molar, to hold permanent molar in position. On right side a little screw apparatus attached to two temporary teeth, pushing permanent molar back into occlusion. Lower model, Eloise K., shows the unusual condition of prognathism of lower temporary teeth, as well as the first permanent molars erupting badly. Child about six years of age.

FIG. 14.



R. B., seven years old. Upper model showing dislocation of upper molar, throwing all anterior teeth out of position. Lower model is closed as teeth should be if molars were correctly occluded. This shows impingement on upper cuspids, an uncomfortable bite, and all other teeth thrown out of occlusion. A very frequent form of irregularity.

FIG. 15.



Robert D. Upper model closed, molars in correct occlusion. Lower model open, showing irregularity among front teeth not dependent on position of molars. This irregularity is easily correctible, as only the four incisors of each jaw need correction at this moment.

needs that that growth shall take place in a region out of sight, but closely related to those parts that are *in sight*, and upon which depend the impressions that our fellow-men are to get of us through the sense of sight.

These cranial additions take place mostly between the first permanent molar and the wisdom-tooth, and its surroundings. Very little, comparatively, of these additions take place in the anterior portions of the jaws, but what does take place there mostly occurs between the points of the cuspid teeth, and in the area formed by the incisors that *should* arch between them, but sometimes do not, themselves being jumbled by an extension of that irregularity of proceeding which began with the first permanent molar.

Those who have extracted the first molar, or, indeed, any other members from the arches, can never know what they have abstracted from those regions lying contiguous to the seat of intelligence and the centre of expression. The weak and flattened faces seen on all sides are witnesses to the loss.

I will show you this evening models taken a year ago of a child six years of age, where the temporary teeth were nearly regular and the incoming first permanent molars were seemingly most regular.

I will show you also models of the same child taken ten months later, which show the first permanent upper molars an entire cusp in advance of the corresponding lower molars, which shows the two upper central incisors projecting three-eighths of an inch beyond the tips of the lower central incisors just erupting; these upper centrals forming an obtuse V-shape, and almost preventing the closure of the lips over them. The lower centrals, in their half-erupted state, touching the upper gums, just posterior to the point at which the greatest tuberosity of the upper incisors still lies beneath the gum.

What has caused this great change in ten months? Not thumb-sucking; she does not do it. Not sucking a bottle; she was weaned years ago. I'll tell you what: adenoids no doubt obstruct the air passages; the child is a mouth-breather, though her mother did not know it until I called attention to it. This habit of keeping the mouth open has drawn upon the levator muscles almost constantly, resulting in a slight flattening of the upper arch in the region of the temporary cuspids.

This, by drawing the ends of the arch closer together, has thrown out the middle of the arch, giving the obtuse V-shape spoken of.

But that is not all; the child occasionally closed the teeth, and, in closing, the lower cuspids struck this narrowed upper arch in a way that was disagreeable, perhaps even slightly painful.

To get relief she closed the teeth a very little to one side, probably the left, where she obtained rest upon the incoming permanent molars above and below and upon the outer cusps of the temporary molars.

This seeking for repose became habitual, to such an extent that when the permanent molars erupted upon the other side of the mouth, they were not only out of line with each other, but they did not cusp,—that is, the long cusps did not fit into the depressions of the antagonist tooth.

It is this cusping, or fitting in of cusps to corresponding depressions, that keep the teeth in position.

The eruptive force of the upper molar, seeking to enlarge that region before mentioned in the interior of the head, has pressed forward the temporary molars and cuspids, and has thus itself gone farther forward than it should, having been left free to move by the teeth closing upon the ends of the cusps on the other side of the mouth when they closed there to get rest.

After the eruption and pressing forward of the left upper molar, the place of rest was apparently changed to that side, and the same process just described has taken place on the right side.

Result: A most serious deformity impending, which has come entirely within the last ten months, and which, if left alone, will, when adolescence or adult life is reached, take years to correct.

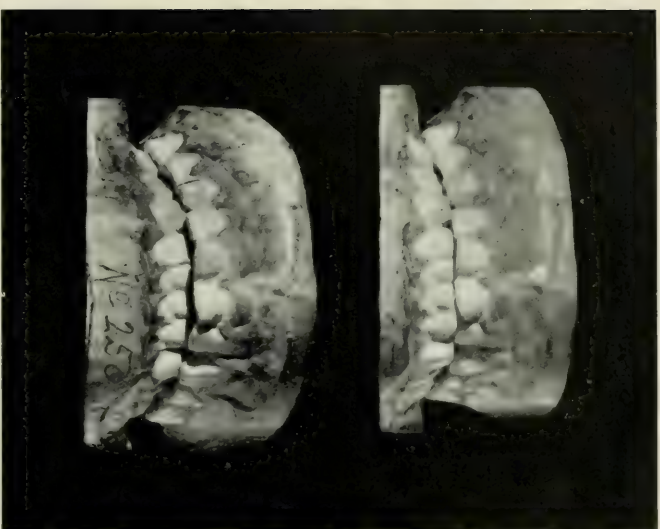
Why should it not be done now?

The influence of occlusion, which means a proper meshing of the cusps of the teeth into the depressions of their antagonizing teeth in the opposite jaw, has not been sufficiently taken into account in efforts at regulation.

That is one reason, and a very potent one, why, as mentioned in the beginning of my paper, some regulating cases have been successful and some have failed; and no one seemed to know the reason for either condition.

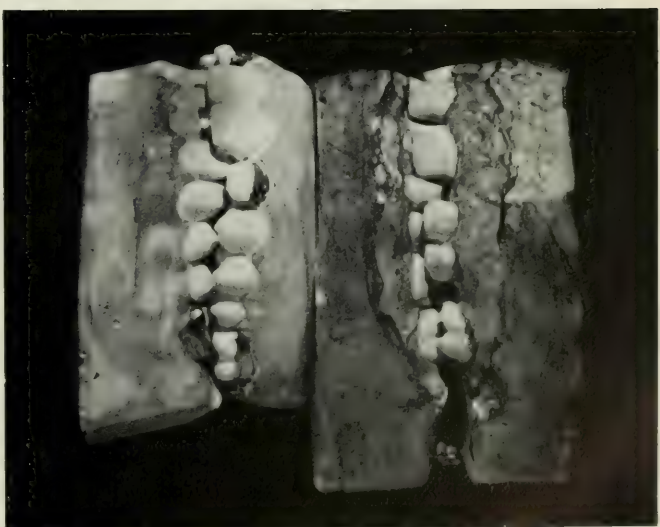
Without this cusping there is literally nothing except the tongue and lips to keep the teeth accurately in their places; and inasmuch as each molar tooth normally occludes with two other teeth, and is itself held from rotation by these two other teeth, we know of no force save the tongue and lips that helps to maintain the arches.

FIG. 16.



Model of deciduous teeth, brought by a professional friend; presented to me closed as in the upper position, showing wear on ends of teeth from this vicious habit of closing. Lower model showing teeth where they naturally belong, and where they fit each other. These two illustrate the power of habit in forming and retaining improper positions among the teeth.

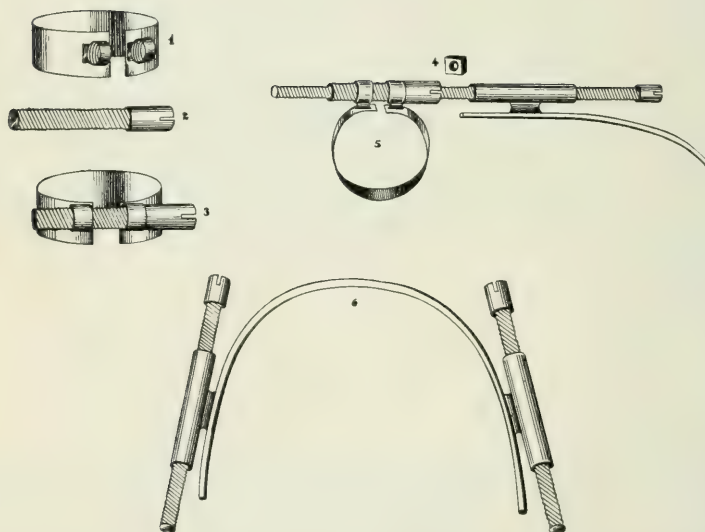
FIG. 17.



Martin, J. M. Upper model, May, 1900, as he was at eight years of age.

Upper molar advanced beyond lower; temporary tooth in front of it having fallen out in bud. Incisors badly fallen in and the bite shortened, so that the child looked as though he had no teeth. Lower model, same month, February, 1903, eleven years of age, showing proper occlusion, lengthening of the bite, ample room for all the permanent teeth to come to their places. Time occupied in regulating, sixty days; no pain during all the operation. Retaining plates still in place, and will be retained until the cusps of the bicuspids can interlock, after which they will be left to themselves, to be acted upon by the tongue and lips.

FIG. 18.



1. Ring for molar, to be fastened to the tooth by the screw 2. 2. Screw with tubular head and with an interior screw thread inside that portion that has a screw thread externally. 3. Ring as it would appear attached to a (right side) molar, with the tubular screw on the buccal side. 4. Nut to attach with soft solder in case one needs to push on the bar. 5. Apparatus as attached, one side. 6. Bar, ready to insert in the two rings.

This fixture is not a universal fixture, but is applicable in certain cases where it is not desirable to have a screw and nut on the lingual side of the anchor teeth.

The accuracy of this assertion may be tested by making exact models of regular sets of thirty-two teeth and hinging them, so that they open horizontally from front backward, showing the contact of the occlusal ends of all the teeth from the lingual side.

A curious instance of the tendency of teeth to return in position to the typical form is shown in the case of Dr. Baker's son, drawings of whose teeth were exhibited before this body at the January meeting.

Having asserted that the young man's teeth, when freed from the restraint of retaining plates, would undergo very considerable changes, I asked Dr. Baker to send me models of the teeth as they now are. He kindly complied and I now have models taken in 1892, 1898, and 1903.

The oval form of the tongue is asserting itself in the rearrangement of the arches, which are being elongated from before backward and consequently flattened at the sides. The intermeshing of the cusps is becoming very much more accurate than it was when under the restraint of the retaining plates.

PRACTICAL USE OF THE X-RAY IN DENTISTRY.¹

BY DR. L. E. CUSTER, DAYTON, OHIO.

IN presenting this subject this evening, in the presence of those most expert as well as of those who have not given this subject much attention, I will try to strike a medium and see if it is not possible to make an entertaining and instructive evening.

In order to explain the nature of the X-ray, I have placed a chart upon the wall which will show a comparison between the air and ether vibrations. Air is valuable chiefly to us for the oxygenation of the blood and for hearing. From the top of a high mountain we suffer from lack of air, as shown by rapid breathing, and we also experience difficulty in hearing at a great distance. Sound, as you will see by the chart, is produced by exceedingly low air vibrations. On the other hand, we have the ether vibrations, and it is through them that we derive electric phenomena,

¹ Read before the Academy of Stomatology, Philadelphia, October 28, 1902.

and it is by reason of them that the X-ray and wireless telegraphy are possible. It is a matter of coincidence that the two phenomena, the X-ray and Hertz waves, have been demonstrated in recent years. It is through the ether that we obtain light, heat, and all electric phenomena. It is a material which fills all space.

The range of human sight is one which reaches, so far as we know, from four hundred billions to seven hundred and fifty billions of ether vibrations. Beyond that we have the actinic rays, and beyond that the X-rays; at the other extreme we have the infra-red and the Hertz waves.

The discovery of the X-ray was made by Röntgen in 1895, partly as the result of an accident. Up to this time, however, others had been at work along the same line. The Geissler tube had been in use for years, and is a tube of low vacuum. This shows how under certain conditions an electric charge will pass through a partial vacuum more easily than through the air. Some ten years after the invention of the Geissler tube came the Crookes tube. This is one of exceedingly high vacuum from which nearly all the air has been exhausted.

The ray is sent off from the cathode, and, striking the anode at an angle of forty-five degrees, is reflected therefrom at such an angle that it can be used. The X-ray differs from the Leonard ray in that it cannot be deflected by a magnet or refracted; also, in that it passes out through the tube without any perceptible interference.

I have in my hand a screen of barium-platino-cyanide, and this becomes fluorescent when the rays pass through it. When I pass my arm before it the rays are stopped by the bone and also to some extent by the flesh, and that gives the distinction between the bone and the flesh. I will put on another tube and you will see a little difference in the effect of a different degree of vacuum. An important point in radiography is the condition of the tube as to vacuum, for upon this depends the appearance of the finished picture. Taking the hand as an illustration, we have about the conditions with which the dentist has to deal. A tube of low vacuum is one which will give a picture of greater differentiation between the bone and the flesh or between the tooth and the alveoli. In operating upon the jaw with a tube of comparatively high vacuum we would not get much contrast between the teeth and the bone with which they are surrounded.

The method by which the X-ray is generated, or the means by which we get this tremendous pressure of current are three,—the Tesla coil, not used to any extent; the static machine, and the plain induction coil. The majority of those engaged in X-ray work alone are using the induction coil, while physicians, as a rule, are using the static machine, because for their purposes it has other values. I should recommend the use of the coil to the dentists. The induction coil as shown here consists of a primary coil, and surrounding that is a secondary winding. The primary is a coil of wire of about two layers covering a bundle of soft iron wire. This is independent of the secondary coil. There are fifteen miles of wire in the secondary coil. This has no metallic connection with the primary; on the contrary, the greatest care is used in insulation of the secondary from the primary. We have not only a half-inch thickness of ebonite, but a thickness of paraffin, beeswax, and resin.

The efficiency of the coil depends, I think, largely upon the interrupter. Not until I had used nearly every interrupter upon the market did I finally decide upon a form of the Caldwell interrupter as the best. By the diagram on the board you will see that not only the perfection of its operation is a good feature, but also the simplicity of it. You will find it gives perfect work under all conditions. It consists of a glass jar in which is a strip of lead and within that a porcelain vessel of almost any kind perforated near the bottom by a small opening the size of a No. 10 or 12 wire, and in which is suspended a strip of lead. The jar is filled about two-thirds with sulphuric acid and water, in the proportions of three of water to one of acid. The theory on which it interrupts the current quickly, decisively, and clearly is that the current, in order to pass from the one electrode to the other, must pass through an opening in the porcelain cup. The solution is decomposed by the current as it passes through the opening, and the moment a bubble of gas forms there is complete insulation between the two electrodes. The connection is quickly renewed by reason of the gas rising to the surface. The frequency of the interruption depends upon the thinness of the porcelain, the volume of the current, and upon the size of the opening. This has been the most successful interrupter, and I would recommend it for nearly all uses because of its simplicity and perfect performance under all conditions.

In the use of the Caldwell interrupter we do away with the use of the condenser, an expensive part of the instrument, and with the uncertainty of the operation of the vibrator. A coil which will give an eight-inch spark will fulfil all requirements. There are localities in which physicians would be very glad to avail themselves of this appliance, and you would then need a twelve- or fifteen-inch coil. Yet all the work which comes strictly under the dentist's care can be done with an eight-inch coil. The apparatus should cost scarcely more than seventy-five dollars. The tubes would cost from ten to fifteen dollars, a fluoroscope about the same, and the interrupter can be made for about a dollar. That should be the limit of the expense, and I do not see why the work should not be taken up by many. It is not expected that every dentist should take up this work, but to those who do I hope my remarks may be of benefit.

I will go through the details of taking a skiagraph or two. These films for dental purposes are about the size of a postage-stamp, and I enclose them in two layers of black paper. I will pass around some of the pictures-which I am taking in this manner. The pictures comprise an alveolar abscess, the condition of a third molar at thirteen years of age, outline of an antrum, complete absorption of the posterior root of the first molar, a retained temporary molar, the absence of a third molar, and an impacted third molar.

The X-ray burn in the first days was a formidable occurrence, but at this day in the hands of dentists and under the requirements for dental work we may say that it is not necessary to produce a burn. I have never produced a burn in dental X-ray operations, and do not expect to do so. The cases which come under the hands of physicians, and especially those in which the search for calculi is made, require a condition of tube which sometimes produces a burn, but for dental purposes the matter of a burn is not to be considered. As fifteen to twenty minutes are required to produce a burn, and but three to ten seconds' exposure is necessary for dental skiagraphs, we therefore have a wide margin of safety.

The burn is somewhat similar to an ordinary burn, yet it is entirely different pathologically. It has the appearance of a scald in the third or fourth stage, and may cause sloughing.

In a therapeutic way the X-ray is being used largely and with

some marked degree of success in the treatment of certain lesions, especially epithelioma, lupus, and the like. This would come under the hands of the regular practitioner, and yet, if dentists in the country or smaller towns had the X-ray appliance, they would be called upon to give the treatment.

(Answering questions.) Pulp nodules can be definitely distinguished, but it is impossible to distinguish a lateral perforation.

NOTES ON MUMMIFICATION OF THE DENTAL PULP.¹

BY WALTER H. NEALL, D.D.S., PHILADELPHIA.

THE assertion can be safely made, without fear of contradiction, that there is not a dentist in active practice but who has had his share of the bother, discomfort, and annoyance of treating pulps in some stage of disorder.

Now, if the treatment could be reduced to an exact science, an infallible rule laid down which, when followed out, would give positive results, pulp treatment would be regarded as a luxury, at least so far as the dentist is concerned, as well as being the greatest possible benefit to the patient of lax nerve. For accomplishing this desired end mummification of the dental pulp has made a bid for recognition.

The question naturally arises, Is the pulp really mummified, or is it subjected to a long, lingering death without pain? or again, Is it preserved and held in bondage to awaken into life, activity, and decay upon its release from its enthrallment?

Several dentists have asserted that months after the said mummification was supposed to have taken place sensation and positive pain had been experienced in the course of preparing the tooth for filling. Others have found the pulp in exactly the same condition it originally was, when they have uncovered it for the purpose of examination, and others have observed a peculiar leathery appearance of this vital organ, to be spoken of later in connection with attendant suffering.

Mummification is the direct opposite to the long-practised method of capping the pulp. In pulp-capping the desire is to pre-

¹ Read before the Academy of Stomatology, October 28, 1902.

serve it in its living state; in the mummifying method the object is to destroy it and embalm it within its bony walls.

As practised by the ancients, mummification is a lost art; embalming, as used at the present time, is not lasting. It must be considered that the ancients spent many days in the employment of the mummifying chemicals upon the dead body and that parts subject to putrefaction were carefully removed; then, again, absolute dryness played an important part; the cavity was peculiarly filled in this respect.

It is doubtful whether the bodies of the Egyptians could have been so well preserved if moisture had had access to them. In pulp mummification, if one could keep out moisture,—that is, the accumulations at the apical end of the root of the tooth under treatment,—the dentist's difficulties would be reduced to a very small compass; but it is the lack of being able to control moisture that works the mischief, and therefore it is reasonable to presume that a pulp cannot be absolutely mummified or embalmed.

It seems to be the consensus of opinion that the best results are obtained when as much as possible of the pulp is removed by the aid of the cocaine pressure method or in the employment of an arsenical preparation, that which remains in the canal being treated with the mummifying material. The writer claims that this is not mummification in the strict acceptance of the term; it is simply employing a method of treatment that has been known and practised for years, the difference being in the medicaments used.

Conservative dentists are deterred in the use of a mummifying agent to the dental pulp *in situ* because the answer to "What will the harvest be?" is enveloped in too many painful and complex possibilities.

A brief history of some twenty-one cases, covering a period of a little over a year, is interesting. In every instance the application of the mummifying compound was made in strict accordance with the directions. Of the material used, one was a patent preparation, ingredients vague; another, a paste procured at a dental supply depot, ingredients published; and another a mixture made for the writer, employing a formula of long use. It is, of course, presumed that the drugs comprising a mummifying paste are known and that the manner of applying the same is understood; going into details would consume too much time in a ten-minute paper.

Of these twenty-one cases, nine were persons presenting them-

selves with either exposed or inflamed pulps; five were persons who do not visit a dentist until their teeth begin to trouble; of the remainder, the cause of distress was equally divided between the rapid decay of the third molar, neglect owing to ill health, and the frequent tooth disturbances due to pregnancy. It is well to state that all of these cases have been communicated with during the past month.

CASES 1 AND 12.—Adult female (two operations in one month). Treatments were in the first and second molars, left superior jaw. Bulbous portion of pulp removed; balance, very tender at that, mummified. Up to the present time perfectly comfortable.

CASE 2.—Adult female. Right inferior first molar; anterior root curved; impossible to extract pulp. No discomfort.

CASES 3 AND 9.—Adult female (two operations in one month). One operation was upon the right superior first molar, the other upon the left superior first molar. These teeth erupted at the time of a severe illness; in consequence their crowns were bereft of protecting enamel. Operation on the third case was performed in May, 1901, the complete pulp being treated to the mummifying material. Quiet reigned until November of this year, when the tooth became sore and ached violently. Upon the filling, etc., being removed, the pain ceased. The pulp was found in a peculiarly leathery condition; not hard and flint-like, but tough, yet not easily penetrated with a sharp explorer. The tooth has been re-treated and filled.

Query: Could pulp capping have produced any worse results?

The ninth case, being in the same mouth, was treated at about the same time; the buccal roots were the ones involved. These have given no uneasiness.

CASE 4.—Adult female. An extremely loose superior molar, almost on the verge of dropping out; much drilling and manipulation would surely have caused its loss. Pulp treated to mummifying paste. Reported to be "in splendid condition."

CASE 5.—Adult female. A left superior third molar; bulbous portion of pulp removed; balance treated to the preserving medication. Excellent result.

CASE 6.—Adult male. Left superior first molar; could not devote time to lengthy treatment; portion of pulp removed, balance mummified. Report, in good condition.

CASE 7.—Adult male. Right superior wisdom-tooth, much

broken down; would not listen to extraction; pulp mummified as a whole. Condition excellent.

CASE 8.—Adult male. A stubborn right superior first bicuspid; impossible to remove all the pulp from canal; mummification resorted to. Success pronounced.

CASE 10.—Minor; male. An exasperating patient, irritable, nervous, and disobedient. Tooth, the left superior first bicuspid, presented a lingual decay, embracing exposure of the pulp. Weeks were spent on the case, a cotton dressing hardly being tolerated. With fear and trembling on the dentist's part, mummification was resorted to and the tooth permanently filled. Not a vestige of pain or discomfort has been experienced since.

CASE 11.—Adult female. A broken-down left inferior lateral; part of pulp removed, balance mummified. Excellent result.

CASE 13.—Adult female. An elongated left superior second molar; decay reaching pulp-cavity through the root; removed as much as possible of bulbous portion of the pulp; treated balance to mummification. Reported as having no pain or annoyance.

CASE 14.—Adult female; monthly nurse. Right inferior first molar; no time for treatment; removed part of pulp, mummified balance; patient immediately left city. Reported comfortable.

CASE 15.—Adult female. A person who always wishes things done in a hurry; had no time and does not care to bother. Tooth, left superior second molar; decayed to exposure on distal aspect; very little of pulp removed; balance treated as in former cases. No discomfort has resulted.

CASE 16.—Adult female, much run down in health and a corresponding weakness of the teeth. The right inferior first bicuspid was deprived of part of its pulp, and the exceedingly sensitive balance was mummified. Reports no trouble or inconvenience.

CASES 17 AND 18.—Adults, male and female, a third molar in each case being involved. Both buccal decays; there were no extractions of the pulp. Both reported a short time ago in excellent condition.

CASE 19.—Adult female. Right inferior first molar; pulp in anterior root, being treated to the mummifying process, remains in quiet and comfort.

CASES 20 AND 21.—Adult females. First molars in each case; as much of pulps removed as possible, the balance being subjected to mummification; each case developed, within a day or two, the

most violent pains, necessitating the immediate removal of the filling and the paste. The teeth quickly responded to treatment, however, and at the present time are in a quiescent state, still unfilled.

The average success observed in the cases just cited seems to warrant a continued and frequent use of a mummifying material in conjunction with pulp treatment, but the results obtained by the writer are far from convincing, for there may yet be a day of reckoning.

PORCELAIN INLAYS.¹

BY DR. T. VICTOR SMITH, PHILADELPHIA.

PORCELAIN inlays are daily becoming more in demand, and it is not an uncommon thing for a new patient to ask, "Do you put in the new kind of filling?" To dentists it is not altogether new, but there is constant improvement and progress in the manufacture of materials and the methods of using them. Nearly all dental colleges have incorporated practical as well as didactic instruction in their curriculum, and one State board, I believe, demands a porcelain inlay as one of its requirements. Hence the age is one of progress, and it behooves the young practitioners, as well as the old, to keep well informed, especially regarding the latest principles of performing operations in porcelain.

I will endeavor to give you some suggestions as I have gathered them from various journals and other sources of information and from personal experience, without going into very much detail, as I take it for granted that you all have a knowledge of the general principles in porcelain inlay operations.

In the first place, I would like to mention a word in regard to cavity formation; most students are prone to make their cavities too shallow. We are not allowed the use of undercuts, of course, but it is necessary to make use of all the retention possible, especially in contour operations extending to the occlusal surfaces. In simple cavities on labial and approximal surfaces, not involving the pulp, it is best to make the floor of the cavity as

¹ Read before the Academy of Stomatology, Philadelphia, October 28, 1902. Discussed on page 201.

flat, and the side walls as perpendicular therefrom, as is possible, always, of course, considering the direction in which the matrix is to be removed. The same principle could be applied to many approximo-occlusal cavities that do not have too strong a bite and are not extensive.

Where the pulp has been exposed and cannot be capped to advantage, it is best to devitalize and use the pulp-chamber for the bulk of the body, thereby giving additional cement surface and mass to the filling to withstand the force of occlusion. A very good method, when the bite is close and the operation extensive, is to utilize the pulp-canal for anchorage by inserting a pin into the inlay which is to extend into the canal. This is done by first fitting the pin, a piece of platinum iridium wire, about 19 or 20 standard gauge, into the canal and clipping to the desired length. This is then removed and the platinum-foil adjusted and burnished to fit, the pin reinserted through the rupture in the floor of the matrix, and an application of foundation body mixed with a thin solution of gum tragacanth is flowed around the pin. This is carefully dried with warm air and the whole gradually teased from the cavity. It is then baked, more foundation body is added, but not enough to overrun the edges, and then baked again. It is now ready to be tried in the cavity and have the platinum burnished thoroughly. Over the margins, then, the enamel bodies can be placed and baked to suit. Special care must be taken not to heat or cool too rapidly in baking because of the uneven expansion and contraction of the platinum and porcelain.

A somewhat similar procedure is a unique way of repairing fractured incisors, not involving the pulp, by drilling a supplemental cavity in the palatine surface, making the matrix and a pin to fit through it into the supplemental cavity. All is removed and baked to completion, and when reinserted the cement flowing round the pin is scraped away and its space eventually filled with gold, thus giving a secure and insoluble anchorage. The pin may be made of an ordinary plate tooth pin ground flat on one side to approximate the pulpal wall of the palatine or lingual extension.

The first case that I treated in this way was about a year ago. A young man, a "cow puncher" he called himself, came into my office with the superior right central incisor fractured

mesio-distally about midway between the cervix and incisal edge, I should judge. His bite was strong. The pulp fortunately had receded to a considerable extent, due to neglect in having the tooth cared for. I knew instantly that an inlay would not remain in position with the ordinary anchorage obtainable, so resorted to the pin and supplemental cavity. The inlay still is in place, and is giving perfect satisfaction. Since then I have repaired several corner fractures in my private practice and in the clinic at the Dental Department, University of Pennsylvania, in the same way, with equally good results.

A few suggestions in securing a good matrix, for upon this almost the entire success as to fit and permanence of the inlay depends. In burnishing the matrix it is well to anneal the platinum several times to keep it as soft as possible. Place it over the cavity orifice and outline the edges, then with a ball burnisher gradually draw from the edge to the centre. When well in the cavity a piece of spunk is placed at the cervical portion and thrust home, another piece added, and so on, until the entire cavity is full, thereby swedging closely to all walls and angles. An instrument can then be held on the spunk and another used by the operator to burnish the edges more carefully. The spunk is then removed piece by piece in advance of the matrix.

The next problem is building in the porcelain body and shading it. My experience has been largely with the Brewster bodies, and although there are several other very good ones on the market, Brewster's has given me the best results. I prefer having it a little finer than it is manufactured, as it gives a more compact and smooth appearance. The palatine portion of the matrix is filled with the foundation body, usually of a deeper yellow than the proper shade of the tooth. Care should be taken to allow the body to extend only to that portion of the matrix representing the margin of the cavity. It is now baked, and the platinum trimmed and replaced in the cavity. The shrinkage will allow a very careful and final burnish around the margin. If there is any spring to the platinum at this point, heat again to redness in the furnace, replace in the cavity, and stretch a small piece of rubber dam over the entire filling; then burnish over the rubber dam. The shading is very cleverly accomplished by Dr. Reeves, of Chicago, by using darker colors, or lighter ones, in larger bulk and fusing over these an enamel general in color

to all parts of the tooth. For instance, suppose we desired to make an inlay that would be quite yellow at the curve and of a bluish tinge at the occlusive. Rather a deep shade of yellow would be applied at the cervical portion of the inlay, and a decided blue at the incisal portion. This would be fused. Over both of these would be applied a light yellow, which would modify the other shades.

If there were still remaining any portion of the inlay with insufficient contour, a new transparent body or enamel would be used to restore the proper shape. This new body is called "XX," and was prepared by Mr. Brewster for Dr. Reeves for just such occasions. It fuses slightly below the temperature required to fuse the regular enamel body. Dr. Reeves claims for his method avoidance of shadow, translucency, and prevention of cement reflection from underneath.

The finished inlay should fit the cavity so closely that only the thinnest layer of cement is present after the inlay is inserted. The retention is best effected by simply etching the cavial surface of the inlay with concentrated hydrofluoric acid. To do this place the inlay face down on a piece of paraffin or wax and with a warm spatula draw to the edges, cool, and apply acid with a hard rubber point for a minute or two. After the inlay has been inserted scrape away excess cement and varnish with sandarach. Then apply paraffin, which will adhere for a much longer time to the sandarach than to the surface of inlay or tooth. Never have the rubber dam over the tooth when trying to match a shade, because when dry teeth are several shades lighter.

Excellent results may be obtained by the use of porcelain enamel paints, both by fusing on the surface of an inlay and under another modifying shade of enamel body.

WHY DENTISTS DO NOT READ.

BY EUGENE S. TALBOT, M.D., D.D.S.

IN an address at the Pedagogic Society dinner, December, 1902, Dr. G. V. Black deplored the fact that dentists do not read. He feelingly urged the teachers of the various schools to stimulate their students to take journals, to buy books, and to read them.

It is notoriously the fact that there are fewer readers among dentists than any other profession. This has been recognized by editors of journals and others for many years. Why is it?

The most glaring illustration of this fact is that, with few exceptions, in papers written by dentists credit is not given to previous writers for the ideas they express. New ideas in a limited specialty like dentistry cannot be obtained without original research.

Dr. L. D. Shepard¹ asks, "Seriously, as a profession, do we read enough? Are we up to the times as a learned profession in the great throes of thought, science, and progress? One grand curse upon our profession from its beginning to the present day has been the lamentable and very general ignorance of its members." According to S. W. Lakin,² "education of the dentists should not only be coequal with the general practitioner, but should greatly exceed his in anatomy, physiology, pathology, therapeutics, and chemistry. It is quite impossible to keep abreast of the times in this inventive, progressive age without being familiar with the current dental literature. Dentists do not, as a rule, read an article a second or a third time." The duties of the dentist are said to be so laborious that he is too tired at night to think or read. Dental students are recruited from the ranks of the less cultured through the country dental office. Therefore he is much inferior to students who enter other professions. Neither of these explanations is satisfactory. Readers and scientists are the busiest men in the profession, and progressive men of all professions have been country-bred.

Dental literature antecedent to 1840 is that of highly-educated men. Books and papers showed thought and learning. They are equal to the best at that time and at the present day. These men were medically educated. Their work evinced vast reading in collateral sciences. Dental literature of value proceeds from men who possess other degrees than D.D.S. Here seems to be the solution of the problem. Take a dozen boys of like education, training, surroundings, and habits. Six enter medical schools, six dental schools. One-half are trained along broad lines with broad ideas in general medicine, while the dental students, although per-

¹ Dental Cosmos, December, 1865, vol. vii. p. 225.

² Ohio State Journal of Dental Science, vol. v. p. 560. Read before the Central Illinois Dental Society, October, 1885.

suing the same studies, are led to believe that, after all, tooth carpentering is *par excellence* an ideal in the profession of dentistry. It is only necessary to obtain enough knowledge of general subjects to get through college. This system of training may make dental students good mechanics, but certainly cannot make scientists.

The faulty methods of teaching the student in dental departments eventually turn out men certainly far below par in scientific training.

Let us hope that with an increasing college term students will be educated in general and special pathology, that scientific, not mechanical, dentistry will be dominant.

SOME USEFUL ANALGESICS.

BY J. MORGAN HOWE, NEW YORK.

WINE OF OPIUM.—This preparation has been recommended for odontalgia; for treating pulps and gingival tissues; but it has been of special service to me in relieving pain in pulpless teeth that continued to ache after local conditions had been made favorable and other applications had failed. Applied in the root-canal, it often soothes the irritated periapical tissues.

MENTHO-PHENOL.¹—Used in the same manner and for the same purpose as above mentioned; has been also a valuable remedy in these cases. Its decided analgesic properties may be proved also when applied to an aching pulp, or to painful tissues of a toothless socket after extraction. It is a remedy worth remembering, when a patient is suffering pain from either of these conditions. It has marked antiseptic properties also, but is not a disinfectant, in the degree required for the treatment of putrescent conditions.

ARISTOL.—This compound is soluble in ether, chloroform, and oils, and in mentho-phenol. It is a germicide and antiseptic, and also has decided analgesic properties. Dr. Jack reported, several years ago, that he used a saturated solution in gaultheria for a final dressing of root-canals in all cases.² A solution in mentho-phenol

¹ Made by melting together three parts menthol crystals with one part phenol crystals.—INTERNATIONAL DENTAL JOURNAL, 1897, page 591.

² Ibid., 1897, page 371.

has proved effective in allaying pain. I am unable to say whether such solution is more efficacious than either ingredient alone, but there is no doubt that both have decided analgesic properties. I have proved this many times with regard to aristol, by using it, in an ethereal solution, in the root-canals of aching teeth. There is an objection, however, to the use of such a solution, in that the evaporation of the ether leaves the aristol in a gummy state, adhering to the instrument, and troublesome to manipulate. The color of aristol, and the fact that it contains more than forty-five per cent. of iodine, suggest caution in using it in anterior teeth, for fear of staining the dentine.

LOOKING BACKWARD AND FORWARD.

BY G. ALDEN MILLS, NEW YORK.

“That, that is determined, shall be done.”

IN a retrospect of fifty years' practice, ending this October, 1902, there ought to come out of it some definite convictions that should be given expression.

The purpose in bringing out here the quotation at the head of this article has an application in my development as a dental practitioner. A “so-called” accident directly called my attention to dentistry, and I have never desired to be anything else. The fifty years has continually imbued me with enthusiasm. The world is filled with beliefs, but actual knowledge is not any too plenty. *A truth* is more sought than *the truth*. Without this freedom, bias and prejudgments exist.

Not long ago a remark was made to me that has left a lasting impression on my mind. While conversing with a salesman in White's depot, this trite remark was made: “Dr. Mills, do you know that all these men that talk so much don't know that one man, two thousand years ago, came along and said something that no man ever said, and it is more and more becoming true?”

This remark is well worth every one's sincere consideration, for, view it as we may, this man is the source of “*The Truth*.” Everything that will ever come as a contribution of true knowledge will centre around this author, or authority. We know that the

human mind kicks against this, but sooner or later it will be found that "it is hard to kick against the pricks."

A vivid illustration is recalled: The late Dr. Atkinson was in controversy with one Dr. —, during his career in New York. The doctor was calling him to look at a demonstration that was a vital proof to the point claimed. All saw that it was so, but so bitterly prejudiced was he against the doctor that he became almost frenzied.

That the fracture of the superior incisors at the age of twelve years by a fall upon the ice, determined my future course of life, just as certainly is it evident that Chapin A. Harris and W. H. Atkinson have proved that they had a direct mission for the shaping of our calling and leading it to aim for a true position which it has not, as yet, occupied, and which I am now convinced it can never do by organization, as it exists at the present time.

To my mind, by the refusal of the medical calling to fraternize with Harris was determined everlastingly the future of dentistry. He came to what he supposed was his own, and they received him not. "That, that was destined, shall be done." The history of Harris's labors are so familiar, I need not any further refer to them.

For years after, as we all know, there was an incomplete purpose in bringing into fraternal gathering practitioners of dentistry. For a time it was but a mass gathering; no high aim was taken based upon a true scientific basis. All seemed but commonplace, until, at last, there came a man. Our first hearing of him was at New Haven, Conn., and the description of him in the journals was to our mind singular. It was being asked about, "What manner of man is he?" And the answer came, "that he was a 'hairy man,' " "a wild man from the West," etc. Atkinson had now come on the scene. How came this about?

A few words of his own will show. He had been in practice twelve years, and he had a brother that was affected with a polypus in the nasal territory, and was taken to what was supposed to be superior skill for relief, which only resulted in destroying the sight for life. Just what the process mentally was, it matured a belief that the field of dentistry opened to his fertile mind a larger field for developing the relief of human ills than medicine. This caused him to enthusiastically espouse our calling.

This association of the doctor struck a flint, with the result

that there was a firing of not a few minds. Ripened by a hard experience, the spirit of this sincere man began to spread. He was now an humble practitioner in Cleveland, Ohio. Who or what called him to New York? Was it an ambition for that field, that he might be of larger use to those who spoke even then a slight appreciation, amid the larger ridicule, which was also given?

Again misfortune, "so-called," opened the door of his admission to New York City. In fact, he turned as a drowning man to a straw, to recover from an investment. He tried to gather from the wrecked business a competency, but failed. Now, with a family of nine children, he turned to his truest friend, Dr. S. S. White, in his disaster. The answer came: "Come to New York and take charge of our dental depot." With his meagre funds,—for doubtless he did not reveal his dire distress,—from Canada he set out for New York, but they gave out about midway of his journey. Nothing daunted, he turned to an impromptu itinerary. We have it from his own lips. Coming into town, immigrant fashion, he took rooms and put up a written notice that he was a dentist and would attend to the needs of any that desired. Hunger was at the door, but "that, that which was destined," was to be done. Before the sun went down he had earned six dollars. His stay provided funds for the final arrival in New York. The particulars are too many; suffice it to say he was installed as man in charge of a dental depot. Those of you who have known him could not predict a success as a business manager. Such are born,—dentists, ditto,—and they used to be fathered; now they are bred (in incubators), and from a variety of circumstances more artificial than real. Under the present order of things I see no escape. I say it with no qualification, that the education of dentists by the schools—*de novo*—has not resulted in the best; it had to be. The cause is readily at hand.

It has been wisely said that "our failures are God's opportunities." This so proved in Atkinson's case. While this had been going on, inquiring minds had been enjoying the doctor's attention, and he had been impressing them that there were possibilities in dental practice that they had not seen demonstrated. This led to a desire on the part of both parties that these things should be shown. It came about. Some of us know of its history. To say that from that time there has not been matured new aspirations, would be folly. Much like the man that spoke something

that no one else had, so it came to be true again, and he, like the first, acknowledged its source. As I remarked at a late dinner-party, given in honor of our worthy co-laborer, Dr. S. B. Palmer, Dr. Atkinson was a superior man in ability, and I said he knew it. Like as the first, again, he spoke as authority, not "as one of the scribes." This authority carries its own witness. Men are brought under conviction, that what is being said is true. There is power behind it, for it has been put into practice.

Pages could be penned regarding the doctor's career in New York. For whatever may be said may be charged to dogmatism. No dentist has ever so impressed himself upon his fellow-dentists as Dr. Atkinson. His professional attitude maintained throughout was supreme. I have never met his equal. He aimed high, and he was led to attempt things that were not attainable by ordinary practitioners. Doubtless some one may be asking, Where are his followers to-day? This is the question that will formulate my answer, to be given ere the close. At the period I am now considering destiny with a new era was dawning. The closed doors of many an office were to be thrown wide open. Earnest minds were forming little knots that were in the future to bind men in fraternal association,—the like that never before had been realized. Those that had formerly sought organic union had failed because of a want of the magnet of unselfishness. Dr. Atkinson never sought organic union by constitution and by-laws. His union consisted of a desire to be useful to bodies that could accept a conversational teaching and a demonstrated proof. It was this that originated the clinic, so potently manifested for good in the practice of many that allied themselves to this unity of purpose whose source was couched in a philanthropic heart. Talk of selfishness in such nobility of natures like Beecher, Greeley, and Atkinson! Alike, they stood as champions for assistance to the needy in the things that they lacked. To-day there is a dearth of such unselfish characters.

True, Atkinson's association brought larger compensation for services rendered, because better service was being given. That more of us could see that this is the reward that follows unselfish labor. Do I hear some one say, Did Atkinson die rich? Yes, but not according to the world's estimates; yet in the heritage bequeathed to those that profited by his teachings. One man has uttered in public that he died poor because he sought to establish

a twenty-five-dollar fee per hour. Nonsense! It was not possible for him to have a fortune, though he had unlimited fees. His one aim was to secure funds for the erection of an institution that would generate a profession that was taught by conversation over the patient in the chair. In this he was disappointed. Right here I predict that this is to be realized ultimately. I admit that the present aspect of teachings does not much indicate such an outcome. Truth is alphabetical. This is a knock-down blow to vaunted boasts of attainments. Great things are being attempted, and they are accomplished. There does not seem to be anything that cannot be accomplished. Dentists are included.

The announcement that I am now to make is that our ambitions, selfishly indulged, bring us into bondage; that is the modern *bête noire*. Socialism is taking the former spirit of fraternism. The benefits of organization are no longer for any and all, but for the privileged few. I do not expect that I will be understood, much less accepted.

A spirit of prohibition is taking the place of the rights of mankind. This is a result of human affairs. It can only run its course; nothing can check it. "That, that is a determined, shall be done."

Again, I said at the dinner-party, before referred to, that fifty years ago I entered this calling of ours. George A. Mills, pure and simple, associated during this time with all the progressive movements,—leaving out the last ten years. To-day he stands represented by the same simple signature; no degrees, no active membership in any organized body of any kind. You ask the explanation. I cannot give it. Nothing on my part has brought it about. To my thought, it has been "destined." To-day I report my thirty years' intimate association with Dr. Atkinson. Along the same line. No dentist is more indebted for what I have been, as a co-worker in usefulness to another, than I am to him. I have never been student in the sense that this term is used. I have absorbed from the superior fellowship, which has created repeated aspirations, followed by responding inspirations. The present outlook is so clear to me, I am going to give a bit of experience, risking a smile that will most surely follow.

Some twelve years ago the late Dr. Bonwill called upon me, saying that he had been out the evening before, in association with some of his co-laborers; and he stated that he was going to tell me

something: "They are saying that Mills is a second Atkinson." Well, I did smile; you know the ancient Sarah did when she was told that she would have a child at her advanced age, but when thus informed she laughed, and denied it. I own up that I smiled; but there is more of it. The first time I met Atkinson I told him of it. Did he smile? No. For a moment he showed a look of distress. I then turned to him and said that I told Bonwill that, should that be so, I had the wish of Elisha of old,—that I might have a double portion of his spirit. That I have imbibed something of his spirit would not be very strange, but I am fully aware that I am by nature of a milder type than he. Now, if I had not also become possessed of some of his teachings, turned into practical application, it would not furnish me with much power of penetration upon others' minds.

No one can dispute the fact that faces us as the outcome of dental legislation. Certainly not a very dignified position. We see quackery flauntingly on the increase throughout our country placed identically upon the same footing legally as we are. Four per cent. of us only in organized association for mutual improvement (supposed to be), leaving outside a large majority of the termed "unwashed," yet believing themselves to be somewhat worthy of public attention and recognition. Not a little has been published of the sayings of fluent writers regarding the interests of this majority. I have solicited these writers for their views: How could they be made practical? but without a word of reply. Is there no one to champion the rights of those oppressed by the iniquitous trampling upon the would-be "bread-winner"? Does any open-eyed observer doubt but what this is the accumulating shadow that is rapidly on the increase, portentous with results? Shocking as it may sound, it is true, all the same; the same spirit has stolen into our organizations. Laws that are flagrantly unconstitutional. This is said to be true by many of our prominent men. We do not need to point out; the facts are well known, and already they have dealt out injustice to those that had a claim to better dealing. One instance I will give, as I know the facts: An applicant appealed to the president of a board that he desired alacrity in their action, for his daily bread depended upon it. He was laughed at and told, "That was what was said by the man in prison for stealing." Are the present conditions of organized bodies inviting for the unorganized? Are there politics in these

bodies that do much to make them unattractive? Should I give my authority for the statement made? It would not be conclusive, but would create a stir. I am told that in certain bodies, "unless one could be used and in full favor, and had a pull, he had no assurance that anything he contributed would find a place in the proceedings published, or otherwise." I personally have no controversy in these matters, for I have nothing to gain or lose. If I were called in counsel with this large majority, I should tell them that they owed something to themselves; that they might put themselves in their true position for future usefulness. They have rights that they should speedily assert. I would not advise them into organizing as a body, but would advise them to form into counsel for an exchange of views and find out if they had not been a little dilatory regarding their vital interests. There is a very practical issue that they have not grasped which under the existing conditions they should, out of self-respect. I would be very glad to meet them and tell them how I view the situation. It does not invite any antagonism, for it should and could be a free field, independent of all organized bodies, and much needs a cultivation that will bring fruitful results beyond anything before accomplished. Could this be brought into action, I am quite sure that there would be an open door to inaugurate the carrying out of much of the natural convictions of our fifty years' practice.

From authoritative quarters it is being voiced that a too large percentage of graduates are turning to quickly secured commercial records rather than to the hardier pursuits and more lasting compensations earned by faithful services. I believe, with this movement, there would be developed a soil which would prove a favorable environment for the establishment of "preventive practice," which is sure to come in the near future.

I am not looking for anything for myself but to be an humble aider in its introduction. There are others with perhaps stronger convictions and purposes than ours, even, that are waiting to join hands in furthering this most helpful service. The great need of this advanced project is an independent condition of all outside of organized bodies (barring quackery), and the introduction of an advocacy of its own on the printed page, in this way distributing its own literature, without any restricted censorship, political or otherwise, and there is no quicker or simpler way than to call an

independent gathering in New York City at a certain date to have an exchange of views.

I am impressed that there would be an interest manifested that would awaken surprise along the regulation lines.

PYORRHOEA ALVEOLARIS: ITS CAUSES AND TREATMENT.¹

BY EUGENE J. WETZEL, D.M.D. (HARVARD), MULHOUSE, GERMANY.

PYORRHOEA ALVEOLARIS, like most other well-defined diseases, is not a constitutional disease, but a local one, and requires local treatment. It appears in two distinct forms. First, the disease commences at the apex of the roots of the teeth without pus formation. The second form commences at the gingival border or margin around the necks of the teeth, with considerable pus formation. Both kinds lead to the entire loss of the teeth if not treated, and ought to be checked at once by the dentist if there are traces to be found.

Physiologists and pathologists are still investigating to find the cause, but I think no man better than the dentist can discover its origin.

The first form is caused by the lack of work and pressure on the teeth. The second is caused by the neglect of cleanliness of the oral cavity. Both kinds can be cured if not too far advanced, and will remain so if instructions as to care, cleanliness, free use of tooth-brush, etc., are carefully observed by the patient. The first step in the treatment of the first kind is to test the strength of the teeth in their sockets, and if any tooth is too loose it should be removed. Then clean the oral cavity thoroughly with a three per cent. solution of hydrogen dioxide or with a 2000 solution of sublimate. Then instruct your patient to exercise some pressure on the teeth and the jaws by masticating the food thoroughly. All soft food should be avoided, and explain to the patient that the teeth are the hardest substance of our bodies, and are therefore there as instruments to do hard work, and not as ornaments only. The best

¹ Read at the thirty-first annual meeting of the Harvard Dental Alumni Association, June 23, 1902.

work and food for the teeth is old stale bread without any butter or any lubricant on it. This cleans the teeth better than any brush. Between meals the patient can chew occasionally some licorice-wood. The patient must be watched and encouraged to persevere. At the beginning of the treatment it is advisable to see your patient twice a week. At each sitting the gums have to be frictioned with hydrogen dioxide, and then make use of tincture of iodine, two-thirds, and zinc chloride, one-third, to stimulate. If those instructions are minutely executed there is generally a great improvement of the teeth after from four to six weeks.

The second form, with pus formation and pockets from beneath the free edges of the gums, is more frequently found. It is generally caused by the neglect of cleanliness, by local irritants such as calculus, necrosis of the alveolar process border. This kind of pyorrhœa alveolaris can be better cured than the one mentioned just now. The treatment is a more serious operation, which consists in the thorough removal of all local irritants such as tartar. This operation is generally not accomplished in one sitting, for at each successive sitting you have to probe carefully again and again to make sure of completeness. When this has been done then make free use of hydrogen dioxide three per cent. solution, or a 2000 solution of sublimate to wash thoroughly out the pockets of the gum. Then discharge your patient and recommend the brushing of the gums and teeth well twice a day. After the first sitting it is wise not to make an appointment for the next day, but for four or five days later, so that the healing process can take place. It is marvellous to see sometimes the change that is produced only after the first sitting, and without exaggeration there are cases where pyorrhœa has completely disappeared. Teeth that are pretty loose ought to be tied together; the new formation has better chance to take place. Into the pockets I introduce, with a fine nerve instrument and very little cotton wrapped around the point, some tincture of iodine, two-thirds, and zinc chloride, one-third, and continue so at each sitting. Formalin might be used if the supuration does not stop with the first tincture.

We often have cases where the first or second upper molar is badly loosened on the palatine root; the buccal roots are quite healthy. In such cases I advise the complete removal of the palatine root, an operation which is easily done with the engine and a fissure bur. (Querhibe.)

After a complete cure has been established the patient must be advised to be examined once a month and have a treatment of the gums made with tincture of iodine and chloride of zinc.

HOW TO CONTROL THE ACIDITY IN THE MOUTH.

We have a great many patients from the age of fourteen years upward who suffer terribly from the ravages of caries. Most dentists cure the disease by filling all decayed teeth, but neglect to make the patients attentive to the cause, which generally is in the saliva. When I began to practise, thirteen years ago, I advised my patients to wash out their mouths very often with the solution of bicarbonate of soda, and the results were pretty good. But wishing still a better success, I have some very hard lozenges (tabloids) of bicarbonate of soda made, and advise my patients to put one quarter of a lozenge (or tabloid) between the upper molar and the cheek before going to bed, changing alternately, one evening on the right, another evening on the left side of the mouth. In this way the bicarbonate of soda dissolves very slowly all night and neutralizes the acid saliva.

Reviews of Dental Literature.

SOMNOFORM, AN ANÆSTHETIC.—“Somnoform,” an anæsthetic introduced by Dr. G. Rolland, of Bordeaux, at a meeting of the French Association for the Advancement of Science, held at Ajaccio, in 1901, seems to meet, to a notable degree, the requirements of dentistry. A paper dealing further with somnoform, read before the same society at Toulouse, in August last, published in *L'Odontologie*, October 30, 1902, is summarized as follows:

Up to the time of the meeting, he had administered somnoform “seven or eight hundred” times in his own practice, for short operations.

To the question, put at the meeting of the year before, as to the safe duration of the anæsthesia, he replies with his experiments.

On Animals.—He has *somnoformed* a dozen guinea-pigs for an hour, without ill effect.

“Every one knows the vulnerability of these little animals to an anæsthetic. I have wished to see also what would be the extreme effect of an anæsthesia of an hour, repeated day after day, and of my guinea-pigs some die at the end of four, five, six, eight days.”

He had anæsthetized rabbits, dogs, and cats for one, two, three, and four hours without any fatality.

Finding a cat in the streets mortally injured, he decided to kill it with somnoform, after experimenting with it. He had kept the cat under the somnoform eight hours, when he was called away. It took, at the end of that time, four minutes and twenty-seven seconds, twelve cubic centimetres of somnoform, and “an absolute blockage of the respiration.” Just what is meant by this last phrase seems doubtful.

On Man.—Its administration is followed by a number of manifestations, usually easily discernible, but sometimes following each other so rapidly that one must be accustomed to the use of the drug to recognize them. They are, first, a fixed gaze, or loss of expression of the eye. Sometimes, though rarely, “contrary to that which happens with ethyl chloride, the pupil is dilated.” Generally, at this moment, the patient is in a state of semi-consciousness, but is oblivious of pain.

Second, stage of contractions. The behavior of the patient in this stage varies. There may be muscular contractions or clonic spasms. The arm, when raised, remains raised and contracted. The degree of consciousness is much diminished, but the reflex or medullary actions are aggravated, though the sensorium registers nothing. The patient may make an outcry, perhaps, but the anæsthesia is complete.

Third, stage of relaxation. The eyelids close, the limbs are motionless, the raised hand falls. Anæsthesia is complete. This is the moment to operate. Consciousness and all the reflexes, except the conjunctival, are lost.

Fourth, loss of conjunctival reflex. It is necessary to push the anæsthesia a good deal further to get this effect. There may be, at this time, an external or an internal strabismus; the eye may roll up or down. The pupil remains contracted or normal.

Fifth, dilatation of the pupil. With a very large dose of somnoform Dr. Rolland has seen this symptom in animals, and occasionally in patients undergoing surgical operations. In such cases

it is only necessary to let the patient take one or two breaths of air for the pupil to regain its normal size.

Sixth, arrest of respiration. Though he has never seen this in the human, he has produced it in the lower animals. Respiration stops in inspiration. In such cases it has only been necessary to give the animal pure air to see respiration start again; in others, tickling of the nose, or the throwing of a few drops of water on the body, or, finally, artificial respiration, has been necessary—this last sometimes after two minutes of cessation.

“Dostre and Morat pretend that the suspension of the respiration determines the fatal arrest of the heart. This opinion, it seems to me, goes beyond the limits of truth. The arrest of respiration is not a cause, but a stage of a process the termination of which is arrest of the heart and death.

“One does not cause the other, and it is quite rare, if one is watchful, that the arrest of respiration is followed by the arrest of the heart.

“In this I am in accord with all the physiologists and with Lauder Brunton, president of the Hyderabad Commission. When there is a failure of respiration, the centre that controls respiration is paralyzed before that which controls the heart, oftentimes long enough before for one to avert the danger.

“The commission experimented upon one hundred and seventy-one dogs and proved that the arrest of respiration precedes the stoppage of the heart by one to eleven minutes.

“In the case of the cat I killed with somnoform, my only experience, the heart beat for six minutes after the respiration ceased.”

Seventh, arrest of the heart. “This last stage need not be reached unless the centres are overcome by a tremendous intoxication with the drug.

“Naturally, all the shades of difference in these seven stages are not seen in all cases.

“The statement that I wish to make is that in more than ten thousand cases I have not seen the least unfavorable symptom in the initial stage, and that I have seen but one case of nausea, with a tendency to fainting, in the case of a person predisposed, after an operation of twenty minutes where I had administered a large dose of somnoform. These symptoms occurred two hours after-

wards, during the period of elimination. The majority of patients arise immediately after the operation, may eat, at once, if need be, or go about their occupations.

"How explain the innocuousness of somnoform in the three periods?

"First. In the initial period: (a) because of the absence of constriction; (b) to its energetic action upon the arterial tension.

"Second. In the stage of surgical anæsthesia: to the elevated tension maintaining its level.

"Third. In the post-operative period: to the normal condition in which the blood remains."

There follows in the paper sphygmographic tracings, blood-counts, and experiments as to the effect of somnoform when agitated with drops of blood in open and closed tubes.

The patient experimented upon was Dr. Rolland himself, when just recovering from an attack of influenza, and shows that, as stated above, the elevation of blood-pressure at the beginning of anæsthesia is one to two degrees of the sphygmographic scale, is maintained at a level, and at the end of the anæsthesia is followed by a depression about equal to the elevation. The pulse drops from eighty-four to a level of seventy-one, the respiration from twenty-eight to twenty.

Conclusions as to Blood Changes.—After an anæsthesia of eight minutes there were but slight changes. One notes:

1. A slight increase of polynucleated corpuscles.
2. A slight diminution of leucocytes.
3. A very slight increase of eosinophiles.

He concludes his paper by calling attention to the "dominant fact" that somnoform has been administered so many times without ill effect.

The description of three cases anæsthetized by Dr. Rolland before the society at the same congress may be of interest:

I. M. X., eleven years; inhalations thirty-five seconds; anæsthesia perfect; duration of same, one minute. Difficult extractions of left superior first molar, the crown of which was broken off. The patient felt nothing. Recovery rapid without incident.

II. Mlle. X., twenty years; nervous, very timid, weeping, discussing; did not inhale well, yet, nevertheless, anæsthesia was perfect. Inhalation forty-five seconds, anæsthesia forty. Extraction of left superior central incisor. Patient felt nothing.

III. Mme. X.; nervous, very impressionable; at the beginning of inhalations violent, but short muscular contraction, then vasomotor dilatation of face, finally muscular relaxation. Four difficult extractions. The patient cried out and awoke at the last extraction. She said she had felt nothing, but had heard everything. Inhalations, thirty-five seconds; anæsthesia, fifty-five seconds.

In his comparison of ether and chloroform Dr. Rolland does not mention the danger of cardiac arrest through inhibition through the vagus, at the beginning of anæsthesia with chloroform. It will be noted that this initial stage is affirmed by Dr. Rolland to be wholly devoid of danger. Somnoform seems to be worth watching.—C. P. B.

DENTAL USE OF HOMŒOPATHIC REMEDIES.¹—The author states that these remedies have given him excellent results in many cases, and he strongly advises their tentative use for the relief of dental disorders. They are not, however, to be used haphazard. It is important to bear in mind the seat of the trouble, the manner of life, the age and sex of the patient. Each remedy has its own particular sphere of action, and should be administered separately, not in combination with others, as is the practice in allopathy. In acute cases calling for prompt relief the dose should be frequently repeated,—every fifteen minutes for the first few hours,—while in chronic cases the intervals may extend to days. If after some time the symptoms become less intense, the remedy is continued, but if only some of the symptoms disappear, another medicine is indicated, just as would be the case if no change took place. When the symptoms lessen, the intervals between the doses should be increased, but the medicine should be continued until a cure is effected. The dose for women is usually less than for men. In some cases a single dose will be sufficient, but if no effect is noticed after three doses, another remedy is indicated. The action of medicine is more rapid with some persons than with others; and some remedies produce their best effect in the morning, as is the case with *pulsatilla* and *sulphur*, while others are more effective in the afternoon or evening, as *nux vomica* and *rhusteti*.

¹ From an article in *L'Odontologia* for November, 1902, by J. Cancela. Translated by Dr. B. McCullough, Philadelphia.

Medicines should be administered half an hour before meals, or one hour after, and during their administration stimulants, spices, coffee, and acids should be avoided. In selecting a remedy, the temperament of the patient is to be considered, as some remedies are better suited to one temperament than to others.

Borax, in weak solutions, he recommends internally, for the relief of aphthous stomatitis. As an external application, he suggests twenty-five centigrammes of borax in fifteen grammes of pure glycerin.

Calendula is especially useful in promoting the healing of wounds and preventing suppuration. The author says, "I always use this remedy after extracting, with most beneficial results; ten grammes of the tincture in one hundred of glycerin, to paint the wounds."

Chamomile is of great value where the motor nerves are subject to excitement or are morbidly irritated. Chamomile has a special action upon the dental pulp, and is therefore of value in pulpitis, in periostitis, and in inflammatory trifacial neuralgia. In the treatment of pathological dentition, to combat the nervous irritability and consequent spasms, it has no superior. The fifth to the twelfth dilution is most generally used.

Chelidonium, used in the fifth to the twelfth dilution, has produced gratifying results in severe odontalgia, and in pain in the jaws.

Caffea is a powerful agent in difficult dentition accompanied with general nervous excitement. The third and the sixth dilution is generally preferred.

Conium is indicated in odontalgia of a throbbing character, where the seat of pain is responsive to thermal changes, and for pain caused by bridge-work or regulating appliances. For internal use the fifth to the twelfth dilution may be used, and as a lotion fifteen to twenty grammes of the tincture may be added to one-thousand grammes of pure water.

Eucalyptus is indicated as an antiseptic in dental caries, and as a tonic to the pulp. Of the different preparations, the tincture is preferred. The leaves may be chewed to perfume the breath, harden the gums, and to cure a bleeding fungous condition of the gums. Of the tincture obtained from the leaves, dilutions of from the fifth to the twelfth may be used, while for local applications cotton saturated with the tincture may be applied, protected with gutta-percha.

Gymnocladus canadensis is considered a powerful agent to combat inflammation of the tongue.

Creosotum. To the distinguished homœopathist, Dr. Teste, we owe the knowledge of this drug in its application to odontalgia. According to him it not only relieves dental pain, but retards the progress of caries, and in difficult dentition with inflammation it is of great value. From the third to the twelfth dilutions are most used.

Mercury. Its effect in increasing the secretions of the entire alimentary tract, and in increased doses causing what is known as mercurial stomatitis, suggests its use in subacute inflammations of the mouth and pharynges. Used in triturations of the third to the sixth.

Phosphorus has a characteristic action on the jaw-bones, as is seen upon workers in match-factories; therefore it is indicated in necrosis of these bones and in rickets, used in dilutions of the third to the twelfth.

MECHANICS OF THE JAWS. By Mr. J. Arbuthnot Lane, M.S., F.R.C.S.¹

As an illustration of the comparatively serious nature of the operative interference which a condition of marked deformity may demand for its efficient treatment, I will now describe briefly the details of a case of open bite associated with all the conditions of the upper jaw which result from imperfect development of the nasopharynx, and with the enlargement of the lower jaw consequent on an excessive development of the muscles of the tongue, producing an underhung jaw and open bite. The boy was unable to bite his food, his mouth was always open, his lips were consequently thick and everted, and his general appearance was any-

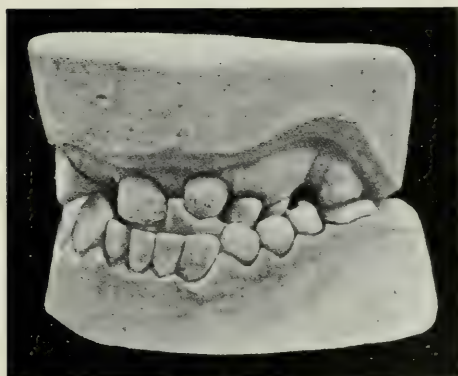
[¹ The *Transactions of the Odontological Society of Great Britain* for January, 1903, contains a very valuable paper on "Mechanics of the Jaws," by Mr. J. Arbuthnot Lane, Surgeon, and not a dentist. An abstract is reproduced here which must prove of interest to those who have been disputing the policy of performing the operation to which he alludes. This operation, largely theoretical here has been a subject of much dispute among orthodontists and oral surgeons in this country, but it seems to have been a quite common practice with Mr. Lane. It consists of cutting away a "triangular area from the body of the lower jaw" on both sides. This operation seems to have been a universal success in this surgeon's hands without the injury anticipated by surgeons here.—Ed.]

FIG. 1.



Condition of case of open bite before operation.

FIG. 2.



Condition of open bite after operation.

thing but pleasing, while his breath was offensive, and his teeth (especially the lower incisors) and gums were covered with decomposing foodstuff, etc. The state of his health was correspondingly unsatisfactory. I would just add that the amount of decomposition and inflammation that go on in the gums and about the teeth in cases of open bite, with the digestive disturbance, general depreciation, and often glandular inflammation consequent upon them, are very much greater than in ordinary mouth-breathers from nasal insufficiency alone. This is due to the fact that in the former a large number of teeth cease to perform any biting function, and tartar, etc., collect about them, while in the latter this is not the case. His mother states that as a young child his jaws and teeth were perfectly normal, and that these deforming changes appeared later in life. Fig. 1 shows the plaster casts of the jaws and teeth. In order to remedy the deformity and reduce his masticatory, respiratory, and æsthetic disability to a minimum, careful measurement of plaster casts was made, and experimental sections were made through them to determine how much bone should be removed in order to obtain the most benefit.

When this had been arrived at I cut away a triangular area from the body of the lower jaw on each side, fastening the fragments securely together with stout virgin silver wire in such a position that the front teeth fitted on those of the upper jaw as closely as possible. It was necessary to bring the anterior fragment upward into a place much above that it originally occupied to meet the receding upper incisors. This plaster cast and photograph show the present condition. As you see, the jaws are now able to perform their normal functions very satisfactorily. The wires were removed later, as they gave rise to inflammation, probably because of the very foul state of the mouth at the time of the operation. In a patient in whom I had displaced the body of the jaw forward from its normal position, I avoided risk of infection by dividing the ramus transversely at the level of the margin of the alveolus, and after bringing the body of the jaw sufficiently far forward I wired it to the ramus. This could be done in many cases of underhung or ill-developed jaw, but it was not applicable to the case I have described, because of the necessity to do away with the exceedingly deforming "open bite."

The teeth in the anterior segment of the lower jaw have been uninfluenced by the section of their nerves and blood-vessels. In

every case in which I had previously divided the lower jaw on either side in order to improve the biting capacity or the appearance of the patient, I found that the teeth in the anterior segment apparently suffered no injury. Indeed, in this particular instance the condition of the teeth, as that of the mouth generally, and the health of the individual have been very greatly improved by the absence of the offensive decomposing, pasty material which covered his teeth, resulting from the functional inactivity of certain teeth and from the excessive ventilation of the mouth consequent on the high degree of open bite. Now that he can keep his mouth shut habitually there is no longer the same accumulation of desiccated epithelium and food about the teeth, and the absence of this material and of the toxins thus produced, as well as his capacity to eat his food properly, are responsible for the very marked improvement in his health. His lips have lost their thick, flaccid, everted form, and are now thin, firm, and in apposition, suggesting a higher degree of intelligence than before.

Curiously enough, the tongue has altered in form, owing to the wasting of its anterior portion, which has resulted from the diminution in the size of the bony space accommodating it. It is as broad and thick as it was before, but is very distinctly shorter, and its anterior portion is thinner and more pointed. I would remind you of a condition illustrated by this and other cases of open bite and superior protrusion, and with which you are probably thoroughly familiar,—namely, the different behavior of the upper and lower incisors where their functions are in abeyance. While the lower incisors project upward beyond their normal level and fan out above the plane of the other teeth, the upper incisors do not reach the normal level. Both form arcs with the concavity open downward. This condition existed in this boy before operation, but the restoration of the function of the incisor teeth appears to have caused the upper ones to descend somewhat, so as to occupy a better working level. Fig. 2 represents the condition of the jaws after the operation. I am indebted to Mr. Spiller for this case of open bite, etc., and for his most kind and valuable help in many difficulties. He tells me that after a few months had elapsed since the operation sensation in the teeth in the anterior segment of the mandible had been restored to the normal, showing that the continuity of the divided inferior dental nerves had been restored.

DISCUSSION.

The President thought the Society was greatly indebted to the author for the trouble he had taken in preparing such an excellent practical paper. The cases described came largely under their ken, there was no man in the room who had not seen similar cases; but he believed the removal of the V-shaped section from the lower jaw on each side was somewhat novel. He had read of such a thing in books, but had never seen the actual models of a case before. Such cases were observed in practice, and it was really very difficult to know how to treat them. He thought it must be very gratifying to the author to see such success attending his treatment of this case.

Mr. Tomes thought the paper was very difficult to discuss off-hand; to discuss it properly it was necessary to sit down and quietly read it, look at the illustrations and casts, and then think the subject well out. One casual matter had passed through his mind while listening to the paper. The boy with the syphilitic tongue was assumed—he did not mean in an antagonistic or an offensive sense—to have altered the position of his teeth. He would like to ask the author what the tongue looked like, because one's experience of syphilitic tongues was that so far from altering the position of the teeth, they themselves became conspicuously indented by the teeth. The tongue was a very soft thing, but still very soft growths, indeed, in the mouth, would displace the teeth and push them out of the way. He had seen teeth very greatly displaced by a tumor of the cheek, so soft that on touching it with the finger it felt as if it would go right through the tumor; and yet soft as it was, by constant pressure it displaced the teeth of an adult. The syphilitic tongue with which they were familiar did not displace the teeth, but became indented; he would therefore like to know what the boy's tongue was like, and whether it had the softness and flabbiness of most syphilitic tongues. In regard to the question of the imperfect development of the nasopharynx and insufficient breathing through it, he took it the author considered that such influence upon the jaws was due rather to the imperfect development and imperfect nutrition of its own parts, and that he did not endorse the view which had been sometimes put forward that there was such a thing as a question of actual alteration of air-pressure, which had some effect. It had always seemed to him that the argument in regard to air-pressure was very weak; they were told there was an alteration of air-pressure, which would have certain mechanical

effects, but had never been told what that alteration of air-pressure was; they had never had submitted to them, at least not to his knowledge, measurements of alterations of air-pressure. If there was an alteration of air-pressure in the imperfect nasopharynx which did not exist in the ordinary state, it was a fact which was capable of very definite experimental demonstration, and so far as he knew that had not been done. Hitherto, assumptions of diminutions of pressure and increase of pressure had been given. He was informed by Dr. Creasy that he did not think the author endorsed that view.

Mr. F. J. Bennett said he would like to answer the question asked by Mr. Tomes, by narrating an experiment he performed when the question of negative pressure arose.

He placed an aneroid barometer in a glass bulb, connecting it with a tube open at both ends. With the aid of an ordinary bicycle pump he endeavored to exhaust the air and to ascertain whether there was any action on the aneroid barometer. There was none whatever. As soon as he closed one end of the tube the needle of the barometer swung round at least a quarter of a circle, and would have gone more if he had exhausted the air further. He concluded that it was only in the event of the mouth being closed as well as the antral cavity, that any exhaustion in the antrum could be obtained.

Mr. J. F. Colyer suggested that as it was almost impossible to discuss the paper without reading it, the discussion should be adjourned for two months. In that way the members would learn very much more from the discussion than they would if it were taken on the present occasion. Many points in the paper were open to criticism, and it would be in the interests of all concerned to put one's remarks in a proper form.

Mr. Constant seconded Mr. Colyer's suggestion that the discussion should be adjourned. He thought the subject was a very important one, and, as Mr. Colyer had pointed out, there were several points in the paper which many members would like to carefully consider and speak upon later. He had travelled over two hundred miles in order to hear the paper, and was not disappointed. The author had very clearly insisted upon the necessity for laying down more definite rules than at present existed with regard to the normal physiological development of the jaws, the forces that brought the teeth into play, and so on, and that alone was very

valuable. He would like to ask the author whether he kept careful notes of cases of nasal obstruction in which there was no deformity of the teeth. He had done so during the last ten years, and should be very happy at any time to compare the results of his notes with those of the author.

It was unanimously agreed that the discussion on the paper should be adjourned to March 30.

Reports of Society Meetings.

THE NEW YORK INSTITUTE OF STOMATOLOGY.

A MEETING of the Institute was held at "The Chelsea," No. 222 West Twenty-third Street, New York, on Tuesday evening, March 3, 1903, the president, Dr. J. Morgan Howe, in the chair.

The minutes of the last meeting were read and approved.

Dr. Kimball, for the Executive Committee, stated that, owing to the illness of Dr. G. V. Black, the regular programme for the evening had been disarranged, but that the Institute expected to have Dr. Black's paper at a later meeting.

Dr. Bogue had been requested to present a paper which he had in the course of preparation.

Dr. Gillett presented to the meeting a brief report of his visit to Chicago to attend the meeting of the Odontographic Society.

Dr. Gillett.—MR. PRESIDENT AND GENTLEMEN,—It was a matter of very deep regret to me when I learned of Dr. Black's illness. I saw him in apparent good health only eight days before I learned that he could not be here.

While I hesitated at undertaking that very disagreeable duty of helping to fill a much larger man's place, I felt that possibly I might for a few minutes occupy your time interestingly with descriptions of a few of the good things I saw at Chicago last month.

The Odontographic Society's meeting clinic was by far the largest dental meeting the world has ever seen. When I arrived at the clinic room at about eleven o'clock of the first morning and asked for a programme, I was told that the entire supply of twelve hundred had already been given out. The next day one thousand more went the same way, and still many men were unable to get

them. The attendance must have reached twenty-five hundred, and four hundred and fifty sat down to the banquet at the Auditorium Tuesday night. The banquet was worthy, the prearranged toasts were few, and good fellowship was everywhere in evidence.

The wonderful thing of this meeting was to see four hundred dentists all working tooth and nail to make their meeting the biggest ever known, every one of them putting aside his little jealousies, quarrels, and personal ambitions and working with a will for the common good. Patrick Henry said, "United we stand, divided we fall," and our forefathers fought it out on that basis. I say to you, "Divided we stand, united we progress." Later generations, nay, some of you, proved once more that "In Union there is Strength."

I want the privilege of quarrelling with my neighbor if I choose, but when it comes to furthering the interests of our profession, let's follow Chicago's lead, wipe the slate for the time at least, and close up shoulder to shoulder.

Dr. Gillett mentioned a number of appliances and methods that he had seen exhibited and demonstrated at Chicago.

He was especially pleased with the method for baking a porcelain crown for molar roots.

He was favorably impressed with a method for applying removable facings to bridges and crowns, called the Wedglock tooth.

A new cataphoric appliance exhibited by Dr. Price was a marked advance over the earlier devices. By it the time required was reduced at least twenty-five per cent., and perhaps more. Dr. Price also exhibited an X-ray apparatus adapted for use in the dental office, that was a revelation to Dr. Gillett. It could be operated with much less noise than any apparatus he had previously seen.

The Coggswell crown and the Donaldson flask and press were among the appliances described and favorably commented on.

Dr. E. A. Bogue read a paper entitled "Some of the Causes of Irregular Teeth."

(For Dr. Bogue's paper, see page 241.)

DISCUSSION.

Dr. S. E. Davenport, in behalf of the Executive Committee, made his acknowledgments to Dr. Bogue for giving the Institute the paper to which all had just listened.

It seemed to Dr. Davenport that a knowledge of the principles

that cause irregularity were at least being understood, even if orthodontists were not always agreed as to the proper way of correcting those irregularities. The Institute had had a rather remarkable series of presentations of the subject during the season, Drs. Angle and Baker, and now Dr. Bogue, having all given very scientific dissertations on the subject. Probably no busy practitioner in the world had given more attention to the subject than Dr. Bogue, or was so well prepared to prove his position by the presentation of casts extending over a long period of years. When Dr. Bogue presented a paper, all might depend upon it as being, not the result of impulse, but of years of practical study and observation.

Dr. Davenport thought all owed a great debt to Dr. Angle for calling attention in such emphatic language to the value of the sixth-year molar; and while this did not in any way detract from what Dr. Bogue had for years been teaching regarding the same matter, Dr. Angle's presentation of the scientific points of the subject was so complete that it had been a revelation to all. Dr. Davenport believed that Dr. Bogue himself had not thoroughly recognized the importance of all the points brought out in his own paper until recently, for his memory went back to a time a few years before, when he had heard Dr. Bogue state that upon the position of the lower cuspid teeth depended largely the ideal position of the teeth in the front of the arch.

Dr. Davenport called attention to that passage of Scripture, Matthew xxi., a part of the forty-second verse, which says, "The stone which the builders rejected, the same is become the head of the corner." At last dentists are beginning to realize that upon the retention of the sixth-year molar, over which there had been so many years of controversy, depended, more than upon any other tooth, the correct position of all the other teeth in the mouth.

Dr. Rolof B. Stanley agreed with Dr. Bogue that the first permanent molars are the keys to the situation. Malposition of the anterior teeth is a symptom, not a cause of the trouble. Dr. Stanley also asked whether the case where there was distal occlusion of the lower teeth on one side only was a mouth breather?

Dr. Bogue replied that he was.

Dr. L. C. Taylor, of Hartford, said that he had been very much pleased with the presentation of the illustrations. Dr. Taylor thought a great aid in cases of regulating was to give the mouth work to do. He had even advised his patients to chew gum; any-

thing to give the teeth work and bring them into their proper articulation. A proper development of the masseter muscles was very beneficial. Work was what they needed in a great majority of cases.

The President pointed out that this was the first time that the necessity of bringing the upper and lower first molars into proper occlusion had been presented at any dental meeting, and that without waiting for the development of the other permanent teeth. He did not remember of ever hearing it before, and thought it a very important point.

Dr. C. O. Kimball had been struck very forcibly with the point made of regulating the teeth of young children, coming to us as they do, at the ages of five, six, seven, or eight. He had always been taught that we must wait until the teeth were all in before anything could be done in the way of correcting irregularities. Of course, there were certain things we could do while the teeth were developing, but in the main we must wait until such time as the teeth were fairly well erupted. We had all done this, and, with fairly good results and working along natural lines, had all made useful corrections. Dr. Brophy, of Chicago, working along a different line, had the credit of showing that during the developing period of the jaw was the time for making changes. Dr. Brophy had shown that in cases of separated palate this developmental period was the proper time for bringing the parts together, although it had been claimed by other surgeons that this could not be done until the process of development had been completed. It seemed to Dr. Kimball that Dr. Bogue was only carrying out this same idea in his paper to-night; that the key to the whole situation was the important point of taking these first molars, as soon as they are erupted, and placing them in their proper positions. Any little irregularities that came later, these two important teeth having been placed in proper position, could be comparatively easily corrected. He would like to ask Dr. Bogue the means he uses in placing these teeth in proper occlusion.

Dr. Bogue, in closing the discussion, stated that it was gratifying that so many men were sufficiently interested in the subject to stay and discuss it. He thanked Dr. Howe very cordially for seeing and acknowledging what he had hoped all would see,—that much of these detrimental irregularities can be prevented or corrected at a *very early age*. That was *the* essential feature and the

one he intended to be brought out. Dr. Davenport was right,—we do grow as we work. These ideas had only gradually come to him, and the principles involved had crystalized into facts in the cases described by him in his paper read before the American Medical Association at Saratoga in May a year ago. He hoped, by and by, if he lived long enough, to be able to answer Dr. Kimball's questions better than he could do now. He did not know how to treat all children. He was very much indebted to Drs. Angle and Baker for their improvements in the original appliances. Some very simple apparatus, such as Dr. Angle uses, was as good as anything else, and far better than any complicated apparatus. Dr. Bogue presented, by illustration, a little apparatus, on similar lines, that was adapted for moving the first molars backward or forward, as well as for attaching all other necessary regulating devices, especially where Dr. Baker's reciprocally acting bands were applicable. This apparatus had no nuts or screws on the lingual sides of the rings, the attaching screws of the rings being hollow and serving all the purposes of the tubes, or so-called "pipes" used by Drs. Angle and Baker; and, having screw threads in their interior, they can also be utilized in other directions if needed.

Adjourned.

FRED. L. BOGUE, M.D., D.D.S.,
Editor The New York Institute of Stomatology.

ACADEMY OF STOMATOLOGY.

A REGULAR monthly meeting of the Academy of Stomatology of Philadelphia was held at its rooms, 1731 Chestnut Street, on the evening of Tuesday, October 28, 1902, the President, Dr. R. Hamill D. Swing, in the chair.

A lecture was given by Dr. L. C. Custer, of Dayton, Ohio, on "The Practical Use of the X-Ray in Dentistry." Dr. Custer illustrated his lecture by the use of charts, skiagraphs, and by a practical demonstration of his apparatus and its use on the actual patient.

(For Dr. Custer's paper, see page 247.)

A paper was read by Dr. Water H. Neall, of Philadelphia, entitled "Notes on Mummification of the Dental Pulp."

(For Dr. Neall's paper, see page 251.)

DISCUSSION ON DR. CUSTER'S PAPER.

Dr. Charles L. Leonard.—I have been much interested in the doctor's demonstration and have learned something of value in the application of the X-ray in dental work. I have used the X-ray in the line of stomatology. In cases of ankylosis of the jaw, in which the patients were unable to open the mouth but to a very slight extent, I have by skiagraphy demonstrated the ankylosis on both sides. The patients were successfully operated upon and motion restored in each case. In another case in the line of the dental surgeon, and in which I was called in to assist, the patient fell through an elevator shaft, causing a broken jaw. Union was defective, and an examination by the X-ray showed the root of the tooth protruding in the line of fracture in the jaw. Removal of the tooth and wiring together of the molars facilitated complete restoration of motion between the fragments, and the bone united satisfactorily. In a number of cases I have examined patients for supposed non-erupted teeth. In one case there was shown the presence of necrosis of the jaw-bone. Operation demonstrated the presence of abscess and relieved the patient from the condition.

The therapeutic use of the X-ray is a new field which is widening and developing every day. We hardly know to-day what application of it will be made to-morrow. It has come within my knowledge to-day to know of an operation which Dr. Keen told me he had done at the Jefferson College Hospital. He covered the half of a sarcoma of the breast with lead, which intercepts the X-ray, and the other half he gave ten or twelve treatments with the X-ray. After removal of the tumor microscopical examination showed a complete degenerative process, showing that we possess in the X-ray a therapeutic agent which is capable not only of restricting the development of malignant disease, but of actually destroying it, and that we have in it an agent more potent therapeutically than any other agent known for the control of malignant disease. Before coming here this evening I was treating a patient with carcinoma of the floor of the mouth. It shows above the alveolar border almost to the level of the upper teeth. When the patient came under treatment he had great pain. The swelling was so great that he was unable to eat. He had also, and has still, a stoppage of the salivary ducts and swelling of those salivary glands on either side beneath the maxilla.

The pain has disappeared entirely and only recurs slightly on the day before he comes for treatment. He has only been given six treatments. The growth has not increased, nor has there been any marked decrease in its size. There is, however, relief from pain. I have seen the same thing occur in sarcoma of the breast to such an extent that morphia has been entirely unnecessary, and the patient has increased in weight and gained in strength without the disorders incident to the use of morphia.

The therapeutic side of the use of this agent is therefore one of the utmost value. It is only in certain cases that it would come within the range of the stomatologist. I have had patients ask for relief of neuralgias of the inferior dental nerve or of the superior nerve. That is a condition which the treatment does not seem to affect, but it has not been tried, I think, with sufficient diligence.

In malignant disease we have in early and radical operation a treatment which in a large percentage of cases, if it does not give freedom from recurrence, at least gives the patient the longest lease of life. Until we can prove that the X-ray can give as good results, I think it is our duty to give the patient the advantages of operation and follow that by the X-ray treatment. That is, the macroscopic tumor should be removed if possible and the microscopic remnants which the knife does not touch can be treated by the X-ray and the patient thus given the double chance from the two remedies which we know to be most efficient.

The doctor has shown us an apparatus which seems to me as perfect as one can desire. It lacks, however, a certain variability, a certain power of alteration which is requisite in the more difficult forms of diagnosis and in therapeutic work. In certain conditions in the dental work we are dealing with opacities which are very great, and with shadows one of which is greater than the other. The bone is less dense than the tooth, and in order to penetrate the tooth you have to use a very high vacuum light which has great power in penetration. The doctor has demonstrated how perfectly that is done. He has shown what light is sufficient and proper for that purpose. It has the added advantage of shortness of exposure and the efficiency of that exposure without danger of X-ray burn. I was speaking to the doctor before the meeting of a case in New York to which I was called as an expert by the dentist there. The dentist was sued for an

X-ray burn, the result of an examination for a suspected fragment of molar. I think the burn was due to the condition of the patient at the time. We know that under unknown conditions the X-ray burn is produced. The time and distance of the tube were such as I would have used if they had not even run into more dangerous conditions. We attribute such a burn to the idiosyncrasy of the individual. I think, however, it is not so much that as it is owing to the state of the individual at the time the examination is made. I believe we produce with the X-ray stimulation of the vitality of normal tissue and over-stimulation of pathological tissue. We know also that pathological tissue is liable to necrosis and death from over-stimulation by a stimulus not too great for normal tissue. So that we have here the helping of Nature in the stimulation of normal tissue and in the over-stimulation of pathological tissue. You see how a patient's depressed condition would account for a burn under conditions that would not produce burn in the normal state of that individual. It is that which we have to study very carefully in therapeutic work. You have to test the condition of the patient and test the effect of the X-ray before beginning treatment. When used in that way the X-ray seems to have an effect which nothing else has. We look forward to its future, of which none can determine actually its value. Those who are studying in it can see farther than those who are simply onlookers. Yet, those who are in it do not know where the value of it will end.

Dr. Kassabian.—Dr. Custer's able demonstration of the technique of the X-ray in dentistry leaves little for me to add to the subject except perhaps a few remarks regarding the importance of X-ray diagnosis in dentistry, in the hope that more enthusiasm may be aroused in the dental profession. My own experience has been practically limited to surgical cases. Out of six thousand skiagraphs, only one hundred were dental cases. There is not in Philadelphia a single dentist who applies the X-ray systematically as do Drs. Custer, Price, and Kells in other cities. I firmly believe that X-ray diagnosis in dental surgery must be made by a dentist who understands the requirements thoroughly, not only from the stand-point of the X-ray technique, but also from the stomatological stand-point. It is a simple and easy operation to take a dental skiagraph, as Dr. Custer has demonstrated, and there is no more danger to the patient in submission to its proper

use than in riding in a railroad car. In all my cases I never burned a patient, but the repeated exposure of my own hands to the effect of the ray has produced in them an X-ray dermatitis which does not yield readily to ordinary treatment. Repeated and long exposures to the ray may cause severe burn. My own exposures are very short.

In closing I would pay a word of tribute to Professor Röntgen, who is ranked with other great discoverers such as Pasteur, Lister, etc.

(The doctor exhibited some interesting skiagraphs.)

Dr. M. H. Cryer.—I have not much to say except that I have been unfortunate so far in having some of our best X-ray men take skiagraphs for me. To-day if I had a case of impacted tooth I would depend upon a good sharp excavator rather than upon the X-ray. I am sorry that Dr. Custer does not live here. I would have had his assistance in a case of caries of the lower jaw extending from the symphysis back to the condyloid process. I have taken the patient to a rather celebrated man in this city, but have secured no results. I cannot tell exactly how far the necrosis extends, but I am waiting, hoping that the periosteum is building new bone under the dead bone. The mouth is not in a healthy condition, and it is a question how long I shall let this dead bone remain. If I remove it before new bone is formed I shall have a deformity. If the X-ray would show me that new bone is being formed under the dead bone I would be inclined to let that remain until there were symptoms of blood-poisoning from the bones there. I think the instrument is not one for the dentist to use without having some means to protect his hands. Many of you know that I am fond of photography, and I was inclined to take it up, but when I saw the hands of some of my friends who work in it I concluded I could not afford to have my hands in that condition.

Dr. Joseph Head.—This most interesting and valuable demonstration seems to me to have a most practical side to it. We are, of course, very much pleased to be able to see the impacted wisdom-tooth and to know when a tooth is or is not below a temporary molar, or whatever it may be that we wish to investigate, but it seems to me that the side so clearly brought forward by Dr. Leonard should receive our special attention. For years dentists and doctors have been looking askance at every tumor that

comes into the mouth and feeling that it had better be left alone. Tumors which were benign have become malignant. It has been my experience in several instances to be compelled to remove these tumors, and I always do it with a certain amount of feeling of responsibility for the injury that might come to the patient should it prove to be malignant. In the light of our present knowledge it seems to me that instead of accepting a doubtful responsibility there is a certain amount of compulsion placed upon all dentists that whenever a tumor appears in the mouth to take it out as thoroughly as possible instead of, as in times past, having a little piece cut from the outside for examination. The tumor should be cut into sections from beginning to end, and if signs of malignancy are shown the patient should be handed over to our friends such as Dr. Leonard represents. The mouth should be kept open and the X-ray applied to that site where the tumor existed, the rest being protected by a lead cone, and in that way the patient may be preserved with almost absolute certainty from recurrence. This might be said to be capable of performance in at least ninety-nine per cent. of cases, for I think Dr. Leonard once told me that only very occasionally does it happen that these malignant growths are stimulated rather than destroyed.

Dr. S. H. Guilford.—That which I have in mind is not exactly in the line of discussion, but during the past summer, while in Copenhagen, I visited an institute established for investigating purposes and for the use of the electrical rays. I went through the building, which is a fine one, with a large staff of assistants and any number of patients. The X-ray is not used, but the chemical rays of the electric light. The system is such that the doctor has as many as twenty-seven patients at a time. In the large room in which treatment is conducted is a large-sized tube, and from it four branches run off, so that each additional tube reflects light upon an operating-table upon which the patients are laid. The treatment has been very successful in lupus, acne, and diseases of that kind. Experiments are being made in the treatment of tuberculosis. One case of X-ray burn that had up to that time resisted all treatment was showing good results. The work is purely experimental and is absolutely charitable. In lupus and acne some strong acid is first used, and after that treatment is entirely by the use of the light rays and the patient subjected each day to the treatment for an hour and ten minutes. The

electrical rays as they come from the arc light are passed through a chemical solution of ferric potassium. All the rays not needed are taken out, and the chemical rays are the ones which do the work.

Dr. John C. Curry.—Is the X-ray supposed to have antiseptic properties on infected tissue, or does it simply stimulate tissue; and has the X-ray ever been used on disease germs pure and simple?

Dr. Custer.—I did not quite understand Dr. Leonard regarding the range of the appliance.

Dr. Leonard.—I simply meant that with this method of interruption you do not evolve as much with the lower vacuum as you do with the high. It is suitable for high vacuum and for frequent interruptions. In certain forms of X-ray work it is more difficult to use this form of interrupter. The apparatus is most suitable for dental work, but I think in its general application it is not quite as useful as some other forms of interruption. That, however, is perhaps simply a matter of opinion with operators.

Dr. Custer.—In our dental work where the conditions are nearly all the same it is not a thing which we would take up practically, but there is no question that the range of requirements is quite extensive, and for that reason the criticism of Dr. Leonard is quite in place.

In regard to the hands, I know that one beginning the work would be inclined to overdo and get a bad condition of the hands. I have a fairly good pair of hands; the only difficulty I have had is with the condition of the nails. They have not the strength of good nails. If to a beginner the danger of exposure could be shown, much difficulty would be overcome.

The X-ray, in the first days, was supposed to be a germicide to some extent. Certainly we have reason to believe it is so.

DISCUSSION ON DR. NEALL'S PAPER.

Dr. M. L. Schamberg.—I might explain that the reason I have been called upon to discuss this paper is that a few years ago I conducted some clinical experiments in pulp mummification. By way of introduction I might say that I have little regard for that man who has routine methods of treating pulps or of filling teeth. It is decidedly unprofessional. It partakes more of the

nature of the work of a laborer than of the work of a man with a brain to have a routine method from which he does not vary. For that reason I was much interested in pulp mummification on account of its application in a few cases that occasionally arise in the practice of almost every dentist. In such cases as third molars, when we have exposure and when the character of the root is entirely unknown to us, or where the tooth has many roots and it is almost impossible to definitely locate these pulp-canals, or, again, when time is a great object, I think one is justified in using a pulp mummifier.

Dr. Hickman.—This subject appeals to me because I had two experiences with the same paste which Dr. Neall used. One of the cases was that of a very nervous patient with whom you could not do anything, and I introduced what is known as Kellogg's paste. It cured the slight pain, but it reappeared. I removed the pulp with the pressure method. In another case I had the same experience, and I have never used the paste since. A friend of mine in Los Angeles used this paste quite a good deal, and thought he had found something of value. He had no trouble for a year, when he reaped the whirlwind that Dr. Neall mentioned. He said he had abscesses in all directions. I saw him to-day, and asked him what he thought to be the best mummifier. His answer was, "A broach." Since my little experience, and from what has been told me, I have taken the pulp out and used oxychloride of zinc for canal filling.

Dr. Neall (closing).—The method I have used is to cleanse the pulp thoroughly, press the paste on it, and then fill with a soft amalgam. Most of the cases have been in the first molar, which is inclined to decay. The third molars have offered a good opportunity for experiment. In one case of severe exposure of the pulp the treatment was used. The gentleman has been undergoing other operations since, and so far all is satisfactory.

As I said, I do not know what the harvest will be. I know what I shall do if the whirlwind strikes some of the third molars, but with the more anterior teeth the problem is a more difficult one.

Adjourned.

OTTO E. INGLIS,
Editor Academy of Stomatology.

MASSACHUSETTS DENTAL SOCIETY.

(Continued from page 221.)

THURSDAY morning at nine o'clock the clinics were opened, and consisted of the following:

1. Joseph Head, M.D., D.D.S., Philadelphia, Pa. (a) A simple method of gold-plating. (b) Porcelain inlays.

2. Charles C. Patten, D.D.S., Boston, Mass. On Jenkins's Body; Hammond Furnace.

3. Dr. Julius F. Hovestadt, Boston, Mass. Porcelain tips and restoring contours by means of porcelain.

4. Mr. Leonard A. Jenkins, Portland, Me. Exhibition and clinic of the Dr. Jenkins's porcelain inlay outfit and work.

5. Charles D. Meeker, D.D.S., Newark, N. J. Manipulation of the archite cement.

6. Walter F. Bisbee, D.D.S., Camden, Me. Crown- and bridge-work. Dr. W. H. Baird's method of making crowns.

7. Dr. Thomas D. Shumway, Plymouth, Mass. Combination tin and gold fillings.

8. Edward Page, M.D., D.M.D., Boston, Mass. Test for amalgam, relative to strength, color, shrinkage, and expansion.

9. Dr. Frederic Freeman, Boston, Mass., exhibited a working model, on skull, of a mechanical appliance supplying the loss of one-half of the inferior maxilla with ball-and-socket joint.

10. Henry A. Baker, D.D.S., Boston, Mass. An exaggerated case of protrusion of lower jaw reduced without chin-piece or head-gear. Illustrated.

11. Dr. Loomis P. Haskell, Chicago, Ill. Continuous gum-work.

12. Edgar G. Hubbell, Springfield, Mass. An all-gold cuspid crown and contour.

13. Elmer B. Abbey, D.D.S., Hartford, Conn. How to construct a Smith improved crown.

14. Murdock C. Smith, M.D., D.D.S., D.M.D., Lynn, Mass. (a) Will have a patient present who has been operated on for giant-cell sarcoma. (b) Burnishing gold, and possibly have a patient present.

15. William F. Andrews, D.D.S., Springfield, Mass. The use of metal in repairing vulcanite.

16. Dr. Arthur J. Robinson, Morrisville, Vt. On crown articulating teeth; articulator.

Dr. Robinson.—In answer to a letter from your committee asking if I would give a clinic, I wrote your chairman that I had made an all-porcelain crown, using a plain tooth for facing and attaching pin with porcelain body,—by means of a gasoline furnace,—and while I had never seen just the same thing done, I did not claim it was all original, but if after looking over the drawings I was to send him, he found anything worthy, I would be glad to give it at this time. I first prepare the root, then grind tip of tooth to conform to front of root. With a little wax retain it there and get proper articulation, fastening tooth and post together, using wax enough to cover the end of the root. Take an impression of it. Remove tooth, post, and wax and insert another similar post. Take a piece of platinum-foil large enough to cover end of root and a little more, punch a hole in the centre, and place over the post. Then by the use of wax—nearly cold—force the foil into the end of the root. Remove and invert end of post and corners of foil, using any investment you may use for other work. When set remove wax and post and insert post with tooth attached and bring investment up in front of tooth enough to give it support. When investment is sufficiently hardened, pick out wax and if necessary solder post to pins; add porcelain to contour and fuse. The object of this crown is twofold,—first, no time is lost in ordering a crown for a given case; second, no crown can be ground to fit a root as perfectly as can be fitted in this manner of making one. It is also cheaply made and to my mind the strongest crown that can be made of porcelain without a band.

The first advantage may not count much generally with those who live near a supply house, but to us who are working in country places all these things are of interest. For those who are not fortunate in having either gas or a day current of electricity, something must be devised whereby one may get the needed heat and apparatus to fuse the porcelain for crown- and bridge-work and for inlays. As I have neither I cast around until I found a furnace with gasoline as motive power and heat. I refer to the little furnace manufactured by the Turner Brass Works in Chicago, and for sale by many of the supply houses. They also manufacture several other appliances which are useful to the dentist, especially those from the country.

17. Mr. John Hood, Boston, Mass. Waxable rubber.

18. Albert A. Shaw, D.D.S., Cambridgeport, Mass. The Shaw Alloy Machine Company. Why every dentist should use the Shaw alloy machine.

19. Dr. George E. Savage, Worcester, Mass. Table clinics on something new in regulating appliances.

20. Lawrence W. Baker, D.M.D., Boston, Mass. Some attempts at artistic artificial work.

21. John N. Crouse, D.D.S., Chicago, Ill. New cement; also tests of the various cements in use.

Thursday session opened by President Faxon at eleven o'clock.

President Faxon.—I am pleased to introduce as the first speaker Dr. L. P. Haskell, of Chicago, Ill.

Dr. Haskell.—LADIES AND GENTLEMEN,—It gives me great pleasure to meet the members of the Massachusetts State Dental Society in this city, or rather in the then village of Chelsea, where my dental career was begun fifty-seven years ago. In the mean time I have never before had the pleasure of meeting the dentists of the old Bay State. Those who were practising here in 1856, the year I left Boston, I think have nearly all passed away. Dr. Wetherbee is the only one of the "old guard" I have seen here. I recall the names of Harwood, Parker, Joshua and Elisha Tucker, Wilson, Keep, Leach, Williams, Codman, the Webbers, Stearns, Ball, Morton, Eastman, Cummings, Hitchcock, Flagg, Thresher, Mayo, Salmon, Leseur, Goodno, Hanson, Bartlett, Dickson, Shepard, Noyes, Dickenson. If any of these gentlemen are living, or are present, it would give me great pleasure to meet them.

As for myself, my position in the profession is somewhat unique, from the fact that in all probability there was never another dentist who confined his labors exclusively to the construction of artificial dentures for fifty-seven years. From the outset, although I received instructions in operative dentistry, I determined to pursue the mechanical branch. In those days it was necessary for the student to learn to do some things which in later years have been unnecessary, as, for instance, melting, refining, and rolling gold plate; making solders; grinding up, backing, and soldering full sets of gum teeth; making his own instruments. The limited dental supplies were kept in a drug-store, where was to be found a small stock of teeth, few instruments and appliances, no gold plate, nor solder.

*Dental
Chelsea*

In 1841 I came to Boston and entered a printing-office, to have remained until I was twenty-one, but at the age of nineteen, in 1845, my brother-in-law, Dr. Hanson, urged me to learn dentistry as his student, and I remained with him three years.

While I had instruction in operative dentistry, successfully filling teeth with the non-cohesive gold then used, I devoted my attention to carving and mounting the so-called "block mineral teeth" for our own practice and for the profession, and this work I continued for eleven years.

The opportunities for the dental student were very limited. There was but one dental college, the Baltimore, and it was generally considered that the student could learn dentistry better in the office of a good dentist than in a college. There were no dental journals nor dental societies. Dental offices were close corporations, as the average dentist would not allow other dentists in his operating-room or laboratory. The student had no opportunity of learning anything outside of his preceptor's office.

Were the graduate of to-day to be placed in an old-time office, with the methods, appliances, and materials of those days, and told to perform any operation, operative or mechanical, he would be at a loss to know how to do it.

In 1856 I removed with my preceptor to Milwaukee, remaining one year, and then located in Chicago, where I have since resided.

I come before you this morning with no theories, no fads, but simply to tell you what I have learned from experience, a plain, unvarnished tale. There are many theories put forth in the dental journals. For instance, there is the theory of the expansion of plaster, which is true, but I have never found, however, that it interferes with the fit of the plate. In 1859 I came to Boston on a visit. Calling on my old friend Dr. Cummings, he took me into his private office and, unlocking a drawer, took out a set of teeth mounted on a rubber plate. This was soon after put on the market and within a year we commenced the use of it, sending our first cases to New York to be vulcanized, and later on procuring a vulcanizer about ten inches in diameter. Two years from the time we began to use it I noticed an unusual change in the alveolar process under these rubber plates, and I have been noticing it ever since. The cause was the non-conductibility of rubber, the retention of undue heat causing undue absorption of the alveolar

process. This being the case, I deem it the duty of every dentist to inform his patients of the fact. Rubber is by no means an unmixed evil. It is about as good as anything on the lower jaw, where absorption goes on extensively no matter what is used. The majority of dentists to-day have come into practice since the introduction of vulcanite rubber. If they were instructed at all in the construction of metal plates, the instruction was of such a nature that they did not feel able to make them a success, consequently fell back on the simple process of rubber.

The next thing I want to call your attention to is a matter of much importance, and one which has caused a great deal of discussion, and that is the retention of upper plates. Plates in the earlier days were fitted close to the jaw, palate as well as ridge. No such thing as vacuum cavities were used. After they were introduced, I used them for twenty-five or thirty years. It is all of thirty years since I have used a vacuum cavity in any case whatever, even in heavy continuous gum. I saw in the dental journal recently this statement by a prominent writer with regard to fitting upper dentures: "I know of none who feel that they can rely upon merely fitting a plate over an automatically accurate model." He also says, "Those opposed to suction chambers declare that alleged success with them is due to their acting as relief chambers." Now, every dentist knows that the centre of the palate is hard and unyielding. But how many dentists are there who consider that it is the only portion of the upper jaw which never changes? Your plate is resting and rocking over that hard centre. If an air-chamber is used the anterior and posterior margins rest on the centre and rock. As the alveolar ridge gives way, it is only a question of time when. My practice has been to provide for that change by putting a thin film of wax over the hard centre, extending it back to within one-quarter or perhaps three-sixteenths of an inch of the back of the plate, which I extend farther back than most dentists do. Contrary to what this writer says, "Those opposed to suction chambers declare that alleged success with them is due to their action as relief chambers,"—they do not act as relief chambers. There is another thing in regard to the air-chamber: the patient has to exhaust the air from it, but with the "relief" the plate is simply pressed up. The plate is in close contact with the membrane, and you get all the adhesion that is necessary. In a rubber plate, of course, either scrape it or the impression.

I want to call your attention to another thing, and that is, in flat, ridgeless jaws better suction can be had with metal plates than with rubber. Here is a model of a case the conditions of which were the worst of any case I ever saw, and yet the patient, who had six plates made by different dentists, told me that with this metal plate he often forgot he was wearing artificial teeth.

Here are two models, in general appearance about the same, both of them bad enough, but they are totally unlike in one respect, and are typical cases. One represents ninety-eight per cent. of jaws having the hard centre and requiring the "relief." The other represents two per cent. of jaws having a soft condition of the centre and usually a crevice. These need no relief, but the plate is to be fitted close to the palate.

In the shaping of upper plates, they should be worn as high as possible all around, and always higher over the cuspids than elsewhere, and the gum made fuller. I emphatically object to the use of "canine" as applied to human teeth.

The lower jaw is the troublesome one. I often say to the patient, "Had I no more trouble with lower sets than with uppers, I should be happy." One thing to be guarded against is allowing the lingual margin to be too deep, so that it is lifted by the action of the muscles and loose integuments.

As to the matter of occlusion, there are more failures from faulty occlusions than from any other cause. There may be a perfect-fitting plate, good adhesion, everything right until the jaws close, and then there is trouble. My rule is that none of the six anterior teeth should meet the lower ones; the pressure should be exact on both sides and on the bicusps and first molar. If there is a second or third molar pitching forward, the upper tooth should not come in contact with it, as the plate would soon be crowded forward.

In regard to continuous gum work, it remains to-day the only perfect denture for full upper sets ever made; the strongest, most durable (when properly made), most natural in appearance, and the only cleanly work used. In 1851 I purchased an office right from John Allen's agent when he came to Boston. A dozen dentists in Boston purchased rights, but had all abandoned it in a year. I have used it continuously ever since. I said if the work was made according to the agent's instructions it would fail. The other dentists followed the instructions and failed, but, seeing

where the instructions were faulty, I profited by it and have succeeded. Too much pains cannot be taken in the construction of this work, especially in securing strength, which lies in the metal foundation. The dental laboratories are making the work cheap by using very thin platinum, no reinforcing of the heel, no backing,—an all-important feature.

Patients have little conception of the different conditions of the jaws. While in one case all the conditions are favorable to the wearing of an artificial denture, in another case the conditions are unfavorable, and the patient will never have the satisfaction the other patient has.

In regard to the soft ridge, I always advise its removal, but few patients consent to it.

As to the extraction of certain teeth, my rule is that if it will make the artificial denture more serviceable by all means do it.

DISCUSSION.

President Faxon.—I will ask Dr. Guilford to open the discussion.

Dr. Guilford.—I hardly like to discuss this paper, because I am afraid I shall spoil the good impression Dr. Haskell has made. He has given some very valuable points based upon his large experience. Dr. Haskell occupies a very unique position in the dental profession, for he is the one man whom I consider to-day the highest authority on this subject we have in America, if not in the world. I pay this tribute to him not in the way of flattery but as a sincere compliment, knowing that he deserves it. When the time comes for me to wear artificial teeth, I hope Dr. Haskell will be alive to make them for me. All the points that have been brought out in the paper are valuable because they have been used and are so intensely practical. If there is one thing harder than another in dentistry, it is becoming skilful in prosthetic work and doing it in such a way as to satisfy yourself and your patient. The country is filled with men who can operate well, but the men who can construct a denture to meet a difficult case are comparatively few. Why is that so? For two reasons, I think. One is that in operative dentistry there have been such wonderful advancements made within the last forty years, advancement at every point, and it has been such attractive work that the majority of men have preferred it and have neglected the other branch. All men want to fill teeth.

They seem to consider it the highest point of attainment in the practice of dentistry. We teachers have to try and impress upon the minds of students that it is a great deal easier to fill teeth than to construct a denture properly. The troubles that come to me in my practice are not those associated with filling, but those related to prosthetic work. There is a great deal of trouble in the peculiar conditions of the mouths. One patient comes with one form of mouth and another with another, and these conditions are constantly varying. If you have sufficient skill and sufficient knowledge, you may make a success of nearly every case, and be considered a very successful prosthetic dentist. Dr. Haskell knows all about it. It is the fifty-seven or fifty-five odd years he has devoted to this work that has made him as eminent as he is to-day in prosthetic work. Nearly all of those before me come from smaller places where more prosthetic work has to be done than in the larger cities. I wish to add two little points to what Dr. Haskell has said. He has told you how to overcome the difficulty of the hard ridge. What are you going to do with the soft ridge? All of you have had cases where an individual has lost four anterior teeth above, and the process has been entirely resorbed. You make a plate from a plaster impression, the patient bites on it and down it comes. I have known cases where four attempts were made to secure a fit under such conditions, and all of them were failures. To overcome the difficulty, take a piece of wax large enough to fill the vacant space between the cuspids and take an impression of that part alone. Chill it, fill the cup with plaster, and reinsert. When the chilled wax comes in contact with the soft ridge it will compress it, while the rest of the roof of the mouth is left perfectly free to be taken with plaster. When the finished plate is inserted and sucked up it will rest as firmly on the compressed tissues in front as upon the hard palate. Sometimes you find mouths in which there is just a single molar remaining, and it is slightly loose with the tissues about it much resorbed. You wish to take a plaster impression. What are you going to do with this tooth? Some will claim that wax is as good as plaster under such circumstances. Others will say, Take your impression in plaster, remove the cup, and cut it out. My plan of meeting the difficulty is to take a piece of French rubber tubing with a hole perhaps the size of a quill, cut off a section long enough to reach from the cervical margin to the widest part of the crown, leaving the occlusal surface entirely free.

Slip it over the tooth and take an impression in plaster. When you take it out the rubber band will disappear. After the impression is poured you will have an exact impression except that the plaster tooth will be larger by the thickness of the rubber band. Take a knife, trim away the excess, and you will have an excellent model. I get a better result in this way than in any other.

President Faxon.—I would like to call on Dr. George F. Grant, of Boston.

Dr. George F. Grant.—Mr. President, I should like to have time enough to tell you what I think and what I have known of Dr. Haskell's work in prosthetic dentistry. I can simply say, however, that I consider him the greatest exponent of prosthetic dentistry in my time. I have enjoyed hearing him talk. It is a great pleasure, and I have enjoyed it, for I have never had this pleasure before. There are many things that I should like to touch upon. Dr. Haskell commences with the impression, and has gone on to the adjustment of the plate. There are a few things I should like to add on the plate fitting, but time will not permit, so I will come at once to the subject of arranging the teeth in such a manner as to give the best effect as to appearance. I consider an artistic conception of this subject one of the great remedies for what is rapidly becoming a great factor in causing such wide-spread, almost universal, facial disfigurement of the American people. Almost every man who visits the smaller towns, especially of New England, may notice the fearful havoc which the wholesale and inartistic insertion of artificial teeth has wrought in the facial expression.

In our schools it has been my experience that most men will dodge prosthetic dentistry if it is possible for them to do so. This is a very grave mistake. Of course, the operative branches are more attractive to the majority, but I would impress this truth upon your notice. A sound and thorough training in prosthetic work is the best foundation upon which to build a real proficiency in our science.

The schools are somewhat to blame for the neglect of prosthesis. The operative department has a ratio of about twenty teachers to one in the prosthetic department. I believe that there must be a decided reaction in this regard. It is not good practical or business policy to do an ordinary class of work for a low fee. It will really injure everybody and benefit none. The American dentist is likely to lose some of his world-wide prestige unless the

standard of prosthetic achievement is elevated to the plane now occupied by the operative field. Prosthetic dentistry is an art which by neglect has fallen almost a quarter-century behind operative dentistry, so that, as a whole, the profession stands as a rather one-sided affair, and the field of prosthetic dentistry presents the wider range of opportunity in the line of advancement. You all know that a piece of poor artificial work is its own condemnation.

As time presses, I will drop only one more hint on the too prevalent mistake in the color of the teeth, especially where a number of teeth are inserted. In an entire denture there should be variety of shading to break the monotony of color. If you have not tried it, the result of a little attempt will be a pleasant surprise.

There are other points to which I hope to be able to call attention, but there is no more time, so that they must be omitted.

Dr. Isaac J. Weatherbee, Boston.—I have but a few words to say. That is with reference to the treatment of the soft tissues in the anterior portion of the jaw. Both of the former speakers left it there. Now, this is not proper under any circumstances whatever. The soft tissue should be cut away. A great many cases of that kind come under my notice, and every one has been cut away until I have a firm foundation for my plate to rest on. Then there would not be the least tipping of the plate. To put in a plate over the soft tissue is not proper at all.

President Faxon.—Are there any questions any one would like to ask?

Dr. —.—If you had a sound tooth in the jaw, would you leave it there?

Dr. Weatherbee.—There is one thing I wish to say and so define my position. There are some dentists who always leave a sound tooth in the upper or lower jaw. I declare most emphatically that the man who will do that thing is a humbug. Why leave a molar in the under jaw? Why do it? It has no business there. It should be removed every time. This idea of leaving one or two teeth is a very absurd idea and should be done away with in the profession.

Dr. —.—If there are two molars, would you leave them?

Dr. Weatherbee.—I would extract them at once. Why? Because the denture will settle down and then there would be a bunch on the under jaw. Then, again, these two teeth back of the plate will settle and you will have to make a new plate. Take them out every time. Never be so big a fool as to leave them.

Dr. George F. Grant.—I should rather dissent from that, because we have altogether a wrong idea of the permanency of our work in the prosthetic line. Suppose at the end of five or six years the plate should settle, and suppose these teeth were still firm. It is always easier to make another plate, and you have something which you can remove. We are never justified in removing a good, sound tooth from the mouth.

Dr. —.—Suppose there are three molars standing on either side, what would Dr. Weatherbee do?

Dr. Weatherbee.—My impression is, if the teeth were absolutely sound and gave assurance that they would never decay, then the lower plate would not drop below. If it were certain they would not decay, I might be tempted to leave them in position, but I have never yet been guilty of the fault of leaving a few teeth, one or two, on either side to hereafter bother the patient. For the sake of the beauty of the lady, and a good conscience on my own part, I think I should remove them.

President Faxon.—I have the pleasure of introducing to you, ladies and gentlemen, Dr. Joseph Head, of Philadelphia, whose subject is "Porcelain Inlays."

Dr. Head, Philadelphia, Pa.—For the last eight or ten years I have used the high-fusing porcelain that melts at a much higher point than gold, but it must be understood that I do not claim that high-fusing body is better than the low-fusing body, but that it gives better results in my hands. The Jenkins low-fusing body does seem to be permanent and resistant to the fluids of the mouth, but when that porcelain stands the test for five or six years more, we shall be able to speak more advisedly of its merits.

Dr. Jenkins has recently made some comparative tests between his and five other porcelains of the higher-fusing type. These tests tended to prove the superiority of the Jenkins porcelain in density, toughness, and edge strength. Still, as only two experiments with each porcelain were made, the results based on such small data must be considered inconclusive, especially in the light of the hundreds of experiments conducted by Dr. Gilbert, that seem to point to an opposite conclusion.

Nevertheless, in spite of the incongruity of these researches all experimenters in the field of porcelain should receive the thanks of the profession, and it is to be hoped that Dr. Jenkins, Dr. Gilbert, and others will continue their researches and publish them,

so that the good points of both high-fusing and low-fusing bodies may be thoroughly revealed.

President Faxon.—Many men of many minds means that we all see things from a little different stand-point, hence that argument, agitation, and unrest which is the march of progress. The one whom I shall ask to open the discussion is one who has had practical experience with these bodies in porcelain work, Dr. Charles C. Patten, of Boston.

Dr. Charles C. Patten.—I hardly think the little I have to say in regard to my attitude will justify me in appearing before you. The important question in regard to porcelain to-day from my observation is the relative merit of the high- and low-fusing bodies. My experience began with the high-fusing body, and the results that I have obtained were decidedly satisfactory. But I did run up against a few obstacles in the using of the platinum matrix, and was induced to use a gold matrix at times. I have been much pleased with the results obtained with the gold matrix. In regard to the difference in the merit of the high- and low-fusing bodies, I am not fully prepared to discuss that. My experience in low-fusing bodies has been confined to the Jenkins, which are to my mind as nearly perfect as anything which can be secured. The manipulation of it is very simple and easy and the results are good. The fusing of the body in the matrix is simply done and the results are just exactly what you expect. Complaints come from one and another in regard to the lack of stability of the colors, but I think if the work is carefully done and properly shaded when the process of fusing is accomplished, the results will be highly satisfactory and closely approximate the shades that go with the outfit. One little point of difference in regard to the fusing of high and low bodies is the possibility that beginners have difficulty in the porosity of the high-fusing body. That was a matter which bothered me in my early work a good deal, but it is also a matter which is easily overcome by care and experience, and the principal difficulty in that direction is haste. I have never had any of that trouble with the low body. Now, about the only difficulty which I could mention is the tendency for the low-fusing body to assume a globular shape. This seems due to the same reason we find the high-fusing body will become porous,—lack of sufficient care. Do not draw it out before it is fused. Wait until it takes its shape in the matrix, which it will to perfection. The matter of comparison between the

high- and low-fusing bodies is of very great interest and importance, and my experience in the high-fusing bodies in contour work of all kinds has been decidedly satisfactory. I fail to see how anybody could ask for anything that would be more so in the application of porcelain in the restoration of corners of the central and lateral incisors and cuspids, or the crowns and proximal surfaces of the bicuspid and molars. The same use can be made of the Jenkins, and permanent results expected if proper care is followed out in the fusing. A great many failures and mistakes are due to a lack of knowledge of the application of the materials at hand. It is absolutely true that all men, and ladies too, as some ladies have taken up this work, with more or less success, cannot become proficient operators in porcelain. Some are more properly fitted and better qualified to pursue this line of work than some others. It is the tendency of our profession to be divided into specialties in the same way the medical profession is becoming divided. We all have a particular taste, and if that taste is allowed to grow and develop unconsciously, we lean in a certain direction by reason of our constitution, and some of those who are pursuing porcelain work will arrive more nearly to perfection than others. Some of us are fitted for crown- and bridge-work, and should make a specialty of that. Ultimately porcelain work will have its true standard, and it has already been accepted as a permanent thing for our profession. I thank you for your kind attention.

President Faxon.—I desire to introduce to you Dr. Robert T. Moffatt, of Boston.

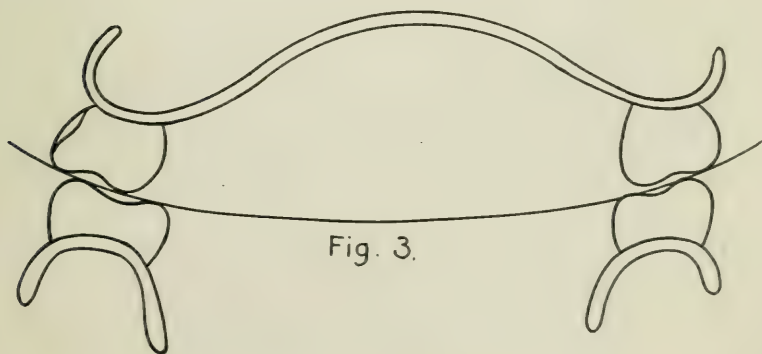
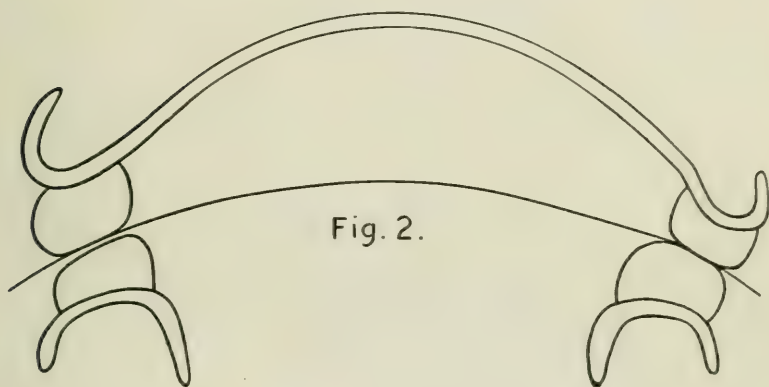
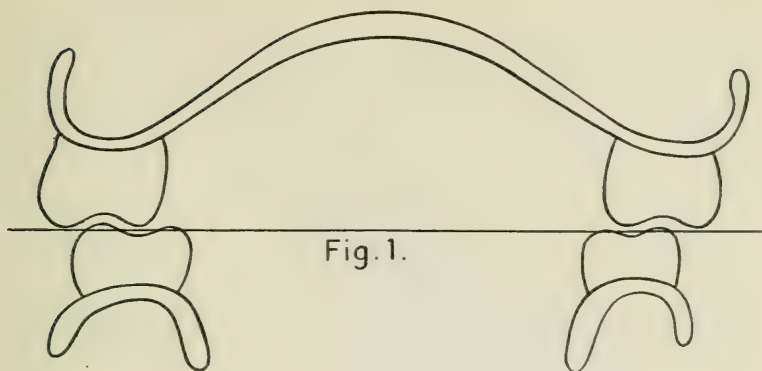
Dr. Robert T. Moffatt.—The subject of porcelain is a very large one, and I will not take you all through it. I only want to mention one point. That is the difficulty of color. It is a difficulty which probably gives as much trouble as anything in the whole subject. (Illustration.) In making a porcelain filling you will get what will be apparently a perfect match, but after it is set in the cement you will be discouraged to find how much darker it is. It is like buying cloth. We buy some blue serge and try to match that with blue silk and satin ribbon, and they would not look alike, although they were the same shade. There is a different characteristic in each. Now, I am going to take a sample case. (Illustrates.) Take a central incisor with a small labial cavity. I want you to imagine a section cut down through there. On the outer surface of this you have got a translucent layer of enamel. This portion (dentine)

of the tooth is rather opaque. When we make a porcelain filling with the bodies which are now in the market, you get a translucent filling set with an opaque cement, so that the light rays are reflected back to your eye, instead of passing on, as it does through enamel and dentine. Here, when you look at it, it looks dark from the front, but when you move to the side you get a ray of light which strikes the sides of the cavity, which are covered with an opaque layer of cement. It seems to me that the only way to overcome that is to make a body which will have an opaque basis and a translucent enamel. The cement washes out after a short time from the surface of the joint, which seems to improve the match. I can recollect a central incisor which I made in the fall of 1895. I made a corner for it by taking a wax impression of the tooth and making a plaster model, and then building it up with the same material used for porcelain teeth (a true body and enamel, *not glass*). That has been in there for seven years, except for a time when the patient was in the hospital and had it knocked out by a screw gag while undergoing anæsthesia, and in all that time it has been perfect. This joint here, on the labial surface, was practically a perfect fit, as good as could be obtained. The palatal joint was not good, but notwithstanding that, the porcelain corner is satisfactory. I think you will find that in looking at some of these corners they appear all right from one direction, but from another they look entirely different, and I think that the cause is the opacity of the cement used for setting.

ARTICULATION AND ARTICULATORS.

BY DR. J. ARTHUR ROBINSON, MORRISVILLE, VT.

While bringing to you anything concerning dentistry, I am reminded very forcibly of the old saying about carrying coals to Newcastle. But I am reminded constantly and in every place I may be, whether in Boston, Hartford, where I had the pleasure of attending the Connecticut State Dental meeting, or elsewhere, that there is a lack exhibited by nearly all dentists or makers of artificial plates in the care of articulation. I have given much time and labor to this subject, and, while I do not profess to have reached perfection, I know I am nearer it than some appear to be by the cases to be seen about us every day. I am indebted to the late Dr. Bonwill for a starter in the matter of improvements in articulation. But



I do not learn that he or any one has advocated the idea that the cusps of the posterior teeth are any way but on a level. Though Dr. Bonwill and others have described the line drawn on the cutting edges and the grinding surfaces from front to back as a gradually ascending line to the ramus, still not much has been said of the line drawn in conformity to the grinding surfaces of the posterior teeth, drawing it through from one side to the other. Dr. Bonwill drew this line straight (Fig. 1). Others draw it curved with ends down (Fig. 2). I say it should be a curved line with ends curving up (Fig. 3). I will copy a little from a paper read by myself before the Vermont State Dental Society in 1900, and published in the *Dominion Dental Journal* in June of that year, a goodly part of which was stolen by a Dominion man and read and published as his own the year following.

"I claim the usual relation of the jaws, or rather the two sets of the human teeth, is as a ball and cup. The lower jaw carried either laterally or forward and back will resume its place when carried to its natural position with a motion as though a cup were being placed on the under side of a ball just fitted to it. Take a small straight edge like a pencil, lay it across the lower teeth, and while the buccal cusps touch the pencil the lingual do not. By reversing the pencil to the upper teeth you will find the opposite, showing the idea of the ball and cup, the upper teeth forming the ball and the lower the cup. The line drawn in conformity to the faces or grinding surfaces of the posterior teeth is a curved line, and the arc of a circle varying from a very small one to almost a straight line."

Artificial teeth, if articulated according to this idea, will, when used, come together to a common centre, so to speak, and remain so until again carried to either side as in mastication. If articulated as in Fig. 1, there is nothing to prevent them from sliding from side to side. How about Fig. 2? It is my idea that teeth articulated like that will afford the maker a lot of fun in repairing plates. With teeth set up similar to Fig. 3 there will be a tendency to crowd the upper teeth together, but if like Fig. 2 the plate will invariably crack.

Much might worthily be said on this subject, but owing to lack of time I will not say more.

WALDO E. BOARDMAN, D.M.D.,
Editor Massachusetts Dental Society.

Editorial.

HAS THE ART OF FILLING TEETH PROGRESSED IN FIFTY YEARS?

To the majority of dental workers in this the beginning of the twentieth century this query will seem absurd, and, given an interpretation as it stands, it could be answered very decidedly in the affirmative. This answer would, however, merely show a very superficial knowledge of the history of this portion of dental work.

In order to comprehend the steps that have been taken to reach present standards of work, the student of dental history must go back to the very beginning of the nineteenth century, or even to the middle of the eighteenth. The fact that reasonably good operations were performed from the period named extending to 1840 is certain. While the personal records of the prominent men of that lengthened time demonstrate satisfactory efforts in the direction of preserving teeth, yet the years comprising the first half of the nineteenth century must be regarded, as far as this country was concerned, as the formative period, the fallow age of dentistry. This dark period was illumined here and there by brilliant intellects, but these only served to intensify the prevailing professional gloom. The renaissance occurred about 1840, and from that time to the present the work has steadily advanced, gradually moulding dentistry into a profession.

It is not surprising that the process of filling teeth, or, as our English co-workers would say, "stopping teeth," has from the first been a leading factor in the onward movement. The general supposition has been that as this advanced the entire curriculum of study moved with it. Whether this has been true must be decided by each individual mind, for facts are wanting to demonstrate its truth.

The writer entertains some views in regard to the filling of teeth that may not be in harmony with accepted opinions. While it is recognized that this is a part of dentistry of vital importance, and that much thought and practice has been given to its develop-

ment, it must be remembered that in the last analysis it is simply a mechanical substitution for lost parts and at the best is very imperfect. Strictly speaking, it ranks with the manufacture of artificial limbs, and, like the latter, serves but a temporary purpose if the life of the tooth be considered, yet the value of this temporary protection can hardly be over-estimated or overstated.

The question that more nearly interests us to-day is, Has the art of filling teeth really made any great advance in fifty years? To answer this the investigation must be concentrated in the period running from 1840 to 1855. To those personally familiar with any portion of this time it will be a useless waste of words to tell them that the operator of that period did excellent work with his non-cohesive foil. The names of Townsend, Arthur, Westcott, Rich, Taft, Dwinelle, and a host besides come naturally before the mind, and when it is said, as it has been by some, that the present work is far superior, the statement will not bear examination in the light of personal experience. It is true non-cohesive gold was used, and it is equally true that contour work was not, as a rule, attempted, but that teeth were not saved by this process is not true, nor is it a fact that the operations were poorly done. The writer has never seen better or more artistic work done than that performed by Dr. Elisha Townsend before his classes, and that without any of the modern appliances. His preparation of cavities, as described with great minuteness in his lectures, was very nearly upon the same mechanical lines so strongly advocated to-day by extension for prevention advocates. He even had the "step" so much regarded as of great value and entirely new in this twentieth century. His filling of root-canals with gold was perfection itself, but is now a lost art with the majority, for the excellent reason that gold is no longer used in filling root-canals. It serves, however, to show that the skill then acquired has not been exceeded by the present school of operators.

While much has been said in favor of cohesive gold as a preserver of tooth structure, and its value, properly used, is recognized by the writer, it must be evident to those who have passed through all the stages of progress from 1840 to 1903 that non-cohesive gold did for the preservation of teeth more than cohesive gold has done with an equal number of operators. Limitation of space prevents argument in support of this, but the fact must be self-evident that close adaptation to tooth walls is a prime essential

to the salvation of teeth, and with cohesive gold this is only accomplished by the greatest care in packing, while a minimum amount of skill will insure non-leakage with non-cohesive gold. Again, the manipulator of cohesive gold will begin at the cervical wall in approximal cavities with his mallet and carry his gold in the same manner against frail lateral walls. The result of this repeated jarring means cracks in the thin enamel, and through osmotic action decay is an assured finality to such an unreasonable method. The non-cohesive operator of 1840 was not troubled with caries penetrating his filling at the cervical border or other frail surfaces, for his hand-pressure never produced cracks.

Persons familiar with histological work can have no difficulty in understanding why the cervical walls decay and why lateral walls eventually leak under cohesive gold. The question, Have we progressed? comes, then, with startling force with these facts thoughtfully considered.

It is unquestionably true that when Arthur, in 1855, introduced cohesive gold, it was the beginning of more artistic excellence in operative procedures. The lack of system under non-cohesive instruction was the great difficulty in teaching the process. It can be truthfully said that it was practically impossible to reduce this to a system. Each man had his own ideas, and the undergraduate was expected to evolve from these a method best suited to his abilities. When, therefore, cohesive gold was introduced the dental mind was not prepared to properly develop the process, and it took ten years, from 1855 to 1865, to remodel instruments and perfect skill in the use of this gold in the presence of moisture, for it must be remembered that the rubber dam was not introduced by Barnum until 1864, and its use was altogether experimental for several years thereafter. It required appliances to make it effective, and these had to be invented. The dental engine was an unknown force, separators were not, and matrices were unknown; in fact, the operator was forced to contend with all the envioning difficulties then present, with no assistance from any of these aids that subsequently made the filling of teeth a comparatively easy task. Yet notwithstanding this, the ten years of novitiate in the use of a new form of gold began to bear rich fruitage, and some of the best work the writer has seen was turned out in these earlier days. It must be remem-

bered that the previous training in the working of gold and silver helped materially in perfecting this work.

It is a common thought that the fillings made prior to the advent of Webb were of an inferior quality. No greater mistake can be made than to accept this as a fact. Webb, through his mechanical ability and persistent clinical demonstrations, impressed the dental mind of his day more forcibly than others who had preceded him, but that his work was superior to the best then known cannot truthfully be maintained. He was an enthusiast, and probably never fully satisfied his own ideals. The writer has known him to spend from early morning until late in the afternoon finishing two fillings. This, theoretically, may be artistic, but it is not practical, and Dr. Webb fell a martyr to his own high conception of duty. That he succeeded in impressing many minds must remain to his high honor, and the influence thus left has been to the maintaining and upbuilding of this branch of dental mechanical art, but let it not be forgotten that he was one among many, and to no one man can the entire credit be given of perfecting the art of filling teeth in this country.

Has this art, therefore, really made any progress since 1855? The superficial observer will be surprised at the question, and yet if the writer were to answer by the assertion, it has not, the astonishment would probably be intensified. The basic methods of filling teeth, shaping of cavities upon the mechanical principles to retain the filling, have not materially changed in fifty years, notwithstanding the earnest talk of "extension for prevention." The good men of 1850 taught the same thing, but had no catching title as a name for it. The real progress made in a half-century has been in matters of detail and the invention of appliances. With the rubber dam, clamps, separators, engine, electrical and power mallets, and the use of electrical currents, there is not a tithe of the skill required to-day to insert a filling that was then demanded. Indeed, given good gold and the appliances named, he must be a blundering mechanic who cannot make a filling worthy the best efforts of the early masters. All the talk that we hear so much of to-day regarding extension for prevention is simply throwing dust in the eyes of the modern operator to prevent his seeing the records of past history and reading therefrom that practical results, whether through the use of non-cohesive or cohesive gold, are worth more than a whole decade of theorizing.

CORRECTION.

IN the article on "The Value of Cataphoresis, published in the November number of this journal, on page 782, the name of Dr. D. F. McGraw was incorrectly written B. F. McGrath in giving him credit for early experiments in the cataphoric administration of cocaine.

L. J.

Bibliography.

LONG'S DENTAL MATERIA MEDICA AND THERAPEUTICS. A Text-Book of Dental Materia Medica and Therapeutics for Students and Practitioners of Dentistry. By Eli H. Long, M.D., Professor of Materia Medica and Therapeutics in the Medical and Dental Departments of the University of Buffalo, N. Y. In one octavo volume of three hundred and twenty-one pages, with twenty-four illustrations, including eighteen full-page colored plates. Lea Brothers & Co., Philadelphia and New York, 1903.

If there is a text-book more needed than any other in dentistry it is a work on Materia Medica properly prepared for the students in dental colleges. When this book was taken up for review it was with the hope that within its pages this desire might be realized; but as these were read, while there was found much to praise there was an equal amount to condemn.

The dedication of the book is an evidence of a lack of tact, as it is a violation of historical evidence. It is "To the memory of William T. G. Morton, M.D., who first made known surgical anæsthesia," etc. This at once rouses a feeling of resentment that Horace Wells should be entirely ignored, but then Wells was not a medical-graduate, and that explains, perhaps, the peculiar dedication.

"The author's conception of the book that is needed to-day is one that will serve three purposes,—viz., *first*, to treat fully all remedies that belong properly to the special field of dental medicine; *second*, to discuss briefly the action and application of the most important general remedies, emphasizing those whose action

may avail in dental diseases and emergencies; and *third*, to furnish matter for reference that will cover all ordinary demands of the dental student and practitioner as to general remedies, their preparation, doses, and uses."

Chapter I. is taken up with the consideration of "Drugs and Medicines," and is well arranged. The next, Chapter II., is "Remedies: Their Classification and Definitions." Chapter III., "Administration of Medicines," follows, and then, in Part II., Chapter IV., begins the consideration of drugs under "Depletives, Counterirritants, Escharotics," etc.

This classification is very objectionable when presented to the dental student. It may be necessary in medical teaching, and hence the medical author assumes that it is impossible to arrange a work on *Materia Medica* in any other form. All the books upon this subject recently published have this serious objection. The consideration of drugs for dental use should be general, without omitting their peculiar properties. When placed under special heads, cross reference is a necessity, and this, in study, becomes a serious annoyance.

One of the radical errors of the book, in the opinion of the reviewer, is the omission of any description of the origin or derivation of the drugs described. The author starts out with a general description, and then follows this with the therapeutic value of the drug under consideration. This is all very well for one familiar with the subject, but the undergraduate will find himself wondering whence this or that drug is derived. The therapeutic descriptions are better than usual, but at times the lack of dental knowledge is painfully apparent. This is in evidence in the description of the effect of arsenic. The author says, "Within a varying time after the application, usually several hours, the patient will experience pain, first gnawing, later throbbing, in character, which will continue until the pulp is destroyed." That this is all wrong requires no argument to the well-instructed dentist. Where pain continues for several hours the arsenic is simply producing increased irritation upon an already irritated pulp, and should be at once removed and sedatives and analgesics applied.

Under *Argenti Nitras* the author states: "It has long been used to cauterize wounds that are probably infected. . . . It does not penetrate deeply, therefore cannot be relied upon to destroy the infected tissue." This is altogether wrong, for the reviewer

several years ago proved by experiment that this generally supposed action of silver nitrate was erroneous. It was proved that this agent was one of the escharotics that *did* penetrate deeply; in fact, the limit of penetration could not be decided.

In writing of soaps the author says of Castile, "Its chief dental use is in dentifrices." The use of soap for this purpose should be discouraged. While an alkali may be beneficial in neutralizing acidity it is a serious question whether in the course of years it has not a deleterious effect upon the organic basis substance of the teeth. This opinion was expressed years ago by a chemist of reputation, and at the time was combated by the reviewer, but experience has tended to confirm the opinion that continued application does affect organic matter, although apparently protected by enamel.

As usual, there is found under Sedatives and Dentition the old and well-worn advice that, "If dentition is found to be abnormal or difficult and teeth are nearly ready to appear, the gums may be scarified, as mentioned before. But cutting the gums over teeth that are not likely to appear for several months is questionable practice, as the tissue will rapidly heal," etc. The reviewer would kindly suggest that the author would do well to spend some time in a well-appointed dental histological laboratory before he publishes a second edition, for a more absurd paragraph could hardly be penned. In the first place, scarification will not avail, and in the second, deep lancing at all stages of development is not only good practice, but absolutely essential to permit the tooth to advance gumward and thus prevent pressure upon the undeveloped root and pulp. It is, however, hopeless to expect some medical men, and an occasional dentist, to rise to the level of intelligence on this subject. The reviewer would recommend the author to read Dewees, on "The Medical Treatment of Children," published by Carey, Lea & Blanchard in 1834, where he will find, among other good things, on page 329, this wise paragraph:

"And though the tooth cut upon may be yet remote from the surface, still the operation may be of the greatest possible advantage by dividing the membrane, now severely put upon the stretch, and from which the whole irritation proceeds. . . . The disturbance of the system is quieted from the moment the gum is divided."

The diagrams in colors showing the action of drugs on various organs are both novel and very satisfactory. They objectively appeal

to the reader, and must impress the student's mind better than any method with which the reviewer is familiar.

While there is much to object to in the arrangement of the book, there is much that is of real value in it, and it is regretted that the author failed, apparently, to seek good dental criticism before publishing. If the book reaches a second edition the author should remember that students need detail; their knowledge can never be safely taken for granted. The derivation of drugs, therefore, is as important as the therapeutics, and the obsolete method of considering these under distinct heads, when dealing with dental undergraduates, should be abandoned. This done, it will be acceptable to dental colleges.

The chapter on Prescription Writing is of special value, and the "Index of Drugs" is a valuable contribution to the general practitioner.

The book is prepared in the well-known and much appreciated style of Lea Brothers & Co.

A POCKET TEXT-BOOK OF ANATOMY. By Wm. H. Rockwell, Jr., M.D., Assistant Demonstrator of Anatomy, College of Physicians, Columbia University, New York. In one 12mo volume of six hundred pages, with seventy illustrations. Lea's Series of Pocket Text-Books. Edited by Bern B. Gallaudet, M.D. Lea Brothers & Co., Philadelphia and New York.

The author of this manual of Anatomy has endeavored to present a text-book to "Prevent the confusion often experienced by the student when, in using a manual for review which is not in harmony with the larger work to which he is accustomed, he meets with differences in the text, even if these differences are unimportant from a practical stand-point."

The text-books of anatomy, in the form of manuals, are quite numerous, and, doubtless, they supply a demand notwithstanding that the larger works, especially Gray's, are in many respects more valuable for careful study. This manual follows Gray, and is therefore an abridged form of the latter, and in this respect a convenience to the student.

The only criticism that can be made is that the illustrations are too limited. While the student is not supposed to derive his anatomy from these, they are a material aid in review, and their absence in some portions lessens the value of the book. This is noticeable in Osteology, especially in the description of the skull.

While the illustrations in other parts are more frequent, an increase would add materially to the value of the book. To the earnest student of anatomy this will not be a serious objection, and the advantage of compactness and clearness of description will counter-balance this defect.

PREFACE AND SUMMARY OF THE WORK OF DR. C. E. DE M. SAJOURS,
PHILADELPHIA, ON THE DUCTLESS GLANDS.

The first volume prepared on this subject by the author will soon be published. The book, as a whole, will be noticed as soon as it appears. The author has sent advance sheets of the Preface and Summary of Contents to this journal, from which quotations are made.

The views of this author have created a wide-spread interest in medical and lay circles and the final publication of these in full will be received with unusual satisfaction. In order that our readers may have some idea of Dr. Sajours's work, it may be best to permit him to tell the story in two or three paragraphs quoted from the Preface. After describing preliminary work, he says, "The thyroid gland, the anterior pituitary, and the adrenals were thus found to be functionally united; *i.e.*, to form an autonomous system, which we termed the 'adrenal system.'

"Further investigation in this direction showed that the action of thyro-iodine upon the anterior pituitary body represented that of any poison introduced into the blood-stream. In other words, it became evident that, instead of acting directly upon the blood or cellular elements, poisons either stimulated or depressed the functional activity of the adrenal system, thus increasing or reducing the production of adrenal secretion, and, therefore, of oxidizing substance in the plasma. Radical changes in prevailing doctrines as to the manner in which general infections or other forms of poisoning produced their effects on the organism thus seemed to impose themselves. . . . We were thus led to conclude that what are now considered as symptoms of infection or poisoning are all manifestations, more or less severe, of *overactivity or insufficiency of the adrenal system*. Indeed, *the physiological action of remedies was also traced to the anterior pituitary body*, the governing centre of the system."

Further on he says, "The *posterior pituitary body*, far from being the insignificant vestigial organ it is generally thought to be, was found by us . . . to stand second in importance only to its

mate, the anterior pituitary body. Indeed, it proved to be the chief functional centre of the nervous system, its numerous groups of neurons forming the starting-point, a highly specialized centre of a single class of nerves."

Again: "Briefly, our inquiry seems to us to have shown that the adrenal system is the source of the secretion which, with the oxygen of the air, forms the oxidizing substance of the blood plasma. It has also revealed, we believe, the origin and mode of distribution of the bodies with which this oxygen directly or indirectly combines; *i.e.*, peptones, myosinogen, fibrinogen, hæmoglobin, and myelin, to insure the continuation of life and the efficiency of all organic functions. Finally, it has suggested that, in addition to these agencies, all leucocytes and, under certain circumstances, the plasma, contain a protective agency, trypsin, which, with Metchnikoff's phagocytic cells, serves to destroy micro-organisms and convert the toxins and other albuminoid poisons into harmless products. Considered jointly, these various factors seem to us to represent the aggregate of vital phenomena."

It will be necessary, before reaching conclusions as to the value of Dr. Sajous's very interesting work, to await the publication before alluded to. The author's well-known and remarkable labors in medical literature entitle this work, when it appears, to special consideration.

Domestic Correspondence.

RAINY-DAY THOUGHTS.

THE article in the November issue of the INTERNATIONAL DENTAL JOURNAL, headed "Putrescent Pulp: A Criticism," is interesting, not because it throws any light upon the treatment of teeth in that condition, but because it simply shows how little some men, engaged in the practice of dentistry, know about the pathological condition of teeth which daily come before them for treatment.

Of course, these young graduates all come from prominent colleges. "So are they all," prominent colleges of the highest standing. And the faculties are composed of "all honorable men."

Yet there are honorable men who do not know how to shoe a horse, conduct a case in court, treat a diseased tooth, or set a broken limb. The fault, therefore, is not always entirely that of the college or graduate, but largely due to both.

The chair of pathology sometimes makes a heavier impression on the rostrum than it does upon the mind of the student, and yet it may not be a very heavy-weight chair. The student may be thick-headed and lacking in his appreciation of the fact that there is more in dentistry than the mere art of mechanics. But criticism is easy, and there is no end to it. What we all want to be able to do is, first, to be able to recognize the troubles which come before us, and when we do, we should be able to make a correct diagnosis; then a treatment will suggest itself to fit each case, and there need be no guesswork about it, and precautions regarding septic conditions and septic poison should always be considered, not for the purpose of alarming the patient, making a big charge, or trying to impress the infallible "ego" of some men, but because of the comfort to your own mind and conscience in knowing that you have done the best you could for your suffering patient, and resting assured that it will be fully appreciated and you will receive a fair reward for your services if you regard them worth anything; and if you do not, who will?

In conclusion, I will offer a few remarks on the treatment of putrescent conditions in root-canals. Where there is soreness and pus, there is nothing in my hands which gives more ready and reliable relief than tincture of iodine used freely in the cavity and root-canal. Then use as a cleansing agent pyrozone. After washing the cavity thoroughly with this, sterilize the cavity with either sodium dioxide or ordinary hydrate of soda, being careful not to allow the sterilizing agents to come in contact with the gum or pass through the ends of the root-canal. I usually apply it by dipping a small nerve instrument into the preparation and passing it into the canals as far as possible; then wash out with alcohol, remove the alcohol with chloroform, and fill with chloropercha. By this method of treatment my experience is that immediate root-filling is possible. However, the amount of soreness in the peridental membrane must be considered, and if the inflammation is excessive, I prefer simply the tincture of iodine treatment, at the first sitting, completing the operation at the second.

G. CHISHOLM.

BIRMINGHAM, ALA.

Incidents of Practice.

TREATMENT FOR PUTRESCENT PULP-CANALS.—In connection with the treatment of canals, Dr. F. W. Stephan writes as follows: "In the treatment of abscesses and of root-canals generally I have found the following mixture most serviceable. Take of oil of cloves and carbolic acid crystals, equal parts. Melt the carbolic acid crystals by heat and add the oil of cloves. This mixture is easily prepared and possesses in marked degree the desirable qualities of the essential oil,—carbolic acid mixture. If used with reasonable care it will not discolor the teeth in which it is placed.—*Items of Interest.*"

BETA-EUCAINE.—In a brochure on "Local Anaesthesia and its Application in Dentistry" (Leipsic, Arthur Felix, 1902), Dr. Herman Thiesing, Royal Court Dentist, discusses the twelve anaesthetics which have been used in stomatology. He finds that acoine, cocaine, alpha-eucaine, holocaine, orthoform, and orthoform-new are less suited because of their greater toxicity; nirvanin, anesin, etc., because of insufficient anaesthetic action and other disadvantages; and that beta-eucaine should be employed. Dr. Thiesing has also used Wilson's anaesthetic, but has entirely ceased to employ it, having become convinced that better results are obtained with a one per cent. beta-eucaine solution; moreover, Wilson's anaesthetic is fifteen times as expensive as such a solution.

Beta-eucaine possesses greater anaesthetic power than tropacocaine, while the duration and intensity of the anaesthesia, and the area affected by it, are equal to that of cocaine. Besides being three and three-fourths less toxic than cocaine, beta-eucaine possesses the important advantage that its solutions can be sterilized with boiling. The author has never observed cedemas or subsequent pains from the use of boiled beta-eucaine solutions, though sometimes, just as with tropacocaine, bleedings followed its employment, which, however, have always stopped promptly without aid.

Insensibility of the mucous membrane may be easily produced by the external application of a beta-eucaine solution. The injec-

tion of a one per cent. solution (to which eight-tenths of one per cent. sodium chloride have been added) at body temperature is absolutely painless and effects a thorough anæsthesia lasting twenty-five or thirty minutes.

From his investigations Dr. Thiesing draws the conclusion that in dentistry only beta-eucaine and tropacocaine may be considered, and occasionally, if very dilute solutions are to be used, or for application to the unbroken skin, also acoine and cocaine.

He himself prefers beta-eucaine because it is less toxic than tropacocaine and has considerably more anæsthetic power. According to the investigations made by various physicians, a one per cent. beta-eucaine solution produces about the same effect as a four per cent. tropacocaine solution. The possibility of intoxication is therefore much greater with tropacocaine.

Dr. Thiesing considers it advisable to employ beta-eucaine solutions of four different strengths for various purposes. He indicates *2.5 per cent. beta-eucaine solutions* for opening abscesses, excising small tumors, extracting loosened (not inflamed) teeth and roots (deciduous teeth) and the four lower incisors, and anæsthetizing the inferior alveolar nerve on the lingula and on the foramen mentals; *one per cent. beta-eucaine solutions* for extracting the upper incisors, bicuspid, and molars, straightening teeth by operation, drilling the alveola, and removing necrotic root apices; *two per cent. beta-eucaine solutions* for extracting the lower molars and bicuspid and the four canines, excavating sensitive dentines, and extracting the pup; and *three per cent. beta-eucaine solutions* for extracting all teeth and roots in acute peridontitis.—*Items of Interest.*

CARBOLIC ACID AS A COAGULATOR.—At the American Dental Society of Europe meeting Dr. E. Lawley York reaffirmed that carbolic acid in the pulp-canal of a tooth penetrated the dentine completely, but not the cementum, hence its safety. In cases of freshly removed pulps a sufficient quantity of the material dissolved its own coagulum, and in putrescence the decomposing process has destroyed all albuminous contents of the tooth.—H. L. W., *Dental Review*, January, 1903.

GUTTA-PERCHA FOR SETTING INLAYS.—Dr. Hofheinz, of Rochester, N. Y., suggests the use of gutta-percha for setting inlays in those cases where from some untoward condition of the oral fluids cement is rapidly disintegrated. He uses for this purpose a solution of gutta-percha in nine parts chloroform and one part eucalyptus oil, the latter being added to retard the evaporation of the chloroform. After the inlay is made, the inner surface is roughened in the usual way, coated with a light-colored ether varnish, and laid aside until the ether of the varnish has evaporated. In the mean while the cavity in the tooth is deepened, slightly undercut, and the undercuts filled with cement. The inlay is carefully held with a pair of tweezers while the edges are moistened with the gutta-percha solution; it is then pressed into place while the cement is still plastic. Much care is needed to accurately gauge the amount of cement placed in the cavity, so that, while there is enough, there is no surplus to dislodge the gutta-percha on the edges of the inlay. By thus combining cement and gutta-percha in setting the inlay, the doctor hopes to secure the firmness and strong adhesion of the cement, and at the same time protect the cement from disintegration by interposing the gutta-percha, which alone comes in contact with the fluids of the mouth.—*Dental Cosmos*, January, 1903, page 31.

A NEW OBTUNDENT.—Dr. Hofheinz, of Rochester, N. Y., suggests the use of zinc chloride in an alcoholic and chloroform solution instead of an aqueous one, for the treatment of hypersensitive dentine. The pain is greatly lessened, and it acts more rapidly owing to the desiccating and obtunding effect of the chloroform and alcohol.—*Dental Cosmos*, January, 1903, page 33.

DEATHS FROM SWALLOWING FALSE TEETH.—In the *Dental Record* (London), February, 1903, page 97, four cases of death from swallowing false teeth are noted, all occurring within a few weeks, a very unusual form of epidemic. In three cases the accident happened during sleep; in the fourth it followed a hearty laugh, death resulting quickly from choking.

In the three cases first mentioned the victims were in the habit

of wearing their plates at night. In the first, after other means had failed to give relief, the plate, carrying three teeth, was removed by an operation, from the after-effects of which and heart weakness the patient succumbed.

In the second, owing to its position, it was three days before the medical men in charge succeeded in removing the plate. In the mean while septic inflammation had set in, and this condition caused death.

In the third, a man, aged sixty-eight years, became suddenly ill, but refused to see a doctor. A few days later he was found dead in bed. A post-mortem examination revealed some false teeth firmly fixed in the dead man's throat. The sharp edge of the plate had ruptured the small blood-vessels, and this had brought about death.

These cases show the importance of removing artificial dentures before going to bed. There is the further consideration that it is only by such removal that thorough cleansing and disinfection of the plates can be secured.

DOVETAIL PORCELAIN INLAYS.—In the *Dental Record* (London), February, 1903, page 103, a somewhat novel method of making and securing porcelain inlays, introduced by Mr. F. R. Howard, is described and illustrated. It is a modification of a method for inserting porcelain inlays in the approximal surfaces of anterior teeth introduced some time ago, in which, by means of suitable revolving tools, the cavity is made to assume the form of a cylindrical tapered hole, horizontally across the approximal surface of the tooth, about two-thirds of its circumference being formed within tooth-tissue. Into this a portion of a porcelain rod, accurately ground to fit the opening made by the tool, is cemented, and shaped to conform to the contour of the tooth after the cement has become hard. Mr. Howard, by means of fissure burs and a special file transforms the approximal cavity into one having three absolutely flat walls arranged to form a slight dovetail. He thus avoids making the attenuated frail edges of tooth-tissue which formed a portion of the cavity walls in the former system, and secures strong cavity margins. The opening is made to receive a portion of a porcelain rod tapering in its length from about one-

fourth to one-eighth of an inch, nearly oblong in section, one side being slightly wider than the other, so as to interlock or dovetail with the cavity formed in the tooth. These porcelain rods are prepared and furnished by the manufacturer accurately ground on three sides. Mr. Howard claims for his method that the repair of the tooth is almost invisible; that nearly all the cavity edge is exposed to the cleansing action of the lips and tongue; that the inlay is self-supporting, and that geometrical exactness is possible. Theoretically, it has much to commend it; it is doubtful, however, if in practice it will fully meet expectations.

W. H. T.

Obituary.

W. J. SMYTH, M.D.S., L.D.S.

THE New York papers stated that W. J. Smyth, M.D.S., L.D.S., committed suicide, Thursday, January 29. Having been associated with Dr. Smyth for a number of years, I have known him to be a good Christian. Dr. Smyth died of heart failure.

I wish to express my thanks to S. S. White, the Dentists' Supply Company, Ritter, Horace Jones, dental manufacturers, for their kind financial aid in assisting me to bury Dr. W. J. Smyth. He had no other friends or relatives in this country.

I hope you will find space for this, in justice to the late Dr. Smyth.

H. J. JANLUSZ.

76 FIFTH AVENUE, NEW YORK CITY.

Miscellany.

A FOSSIL UNEARTHED IN AUSTRIA.—Some two years ago, while tending some roots of the vines in a vineyard at Attenburg, Lower Austria, a gardener unearthed the lower jaws and upper molars of a gigantic animal, presumably a rhinoceros, which were taken to the high school at Vienna for further investigation. Professor Toula closely examined the relics, and recognized from the structure of the teeth that the remains were not those of the ordinary

woolly rhinoceros. He immediately repaired to the vineyard, where he continued excavations at the point where the skull was disinterred, and discovered practically the whole of the skeleton of this interesting animal, which has now been mounted. Although a portion of the skull is missing, there is sufficient to show that the beast was of the two-horned species found in Sumatra. The breccia where the skeleton was found is of the Pleistocene age. It also contained the remains of a goat.—*Scientific American*.

AN OXYACETYLENE BLOW-PIPE.—An oxyacetylene blow-pipe is described by M. Fouche in the Bulletin of the French Physical Society. The flame is formed by the combustion of a mixture of one part of acetylene to one-eighth of oxygen, and in order that the explosion may not travel back into the blow-pipe, a jet velocity is required due to the pressure of a water column four metres in height. The flame melts most metals readily; it will solder iron and steel. Even silica and lime are melted by it. With a reduction of the proportion of oxygen, the flame becomes luminous, and on falling on lime the free carbon goes to form carbide of lime.—*Scientific American*.

TO PERFECTLY FIT CLASPS.—Dr. Geo. W. Pitts, at the ninth annual clinic of the Chicago College of Dental Surgery Alumni Association, demonstrated a method of perfectly fitting clasps for partial dentures.

Thin platinum is first burnished around the tooth to be clasped and extended slightly into the sulci. The clasp is then fitted over the platinum, the two waxed together, removed, invested, and solder flowed between them and over the platinum projecting between the cusps. The idea of the clinician being that the platinum may be perfectly adapted to the tooth, whereas clasp metal could not be, and that prevention of crowding upon the tissues is prevented by the projections upon the occlusal surface.—*Dental Review*.

CHEMICAL TEST FOR SODIUM DIOXIDE.—Place about one gramme of the sodium dioxide powder in a clean, dry test-tube and add one cubic centimetre of water. If the chemical is efficient,

enough oxygen will be generated to kindle a splinter to glowing heat when held at the mouth of the tube.—J. P. BUCKLEY, *Dental Review*.

Current News.

AMERICAN MEDICAL ASSOCIATION, SECTION ON STOMATOLOGY.

THE following programme will be given at the meeting of the American Medical Association, to be held in New Orleans, May 5 to 8, 1903:

1. Chairman's Address, M. L. Rhein, New York City.
2. Symposium on the Dental Pulp:
 - (a) "Notes on Pulp Technique," Martha Anderson, Moline, Ill.
 - (b) "Minute Structures of the Dental Pulp," Vida A. Latham, Chicago.
 - (c) "The Vasomotor System," Eugene S. Talbot, Chicago.
 - (d) "The Dental Pulp viewed without the Microscope," T. E. Constant, Scarborough, York, England.
 - (e) Subject to be announced, J. Choquet, Paris, France.
 - (f) "The Development of Hard Tissue in the Pulp," D. E. Causch, Brighton, England.
 - (g) "Some Histological Facts Contradictory to the Theory of Odontoblasts," Michael Morgenstein, Strassburg, Germany.
 - (h) "Pulp Hypertrophy of the Teeth," Oskär Römer, Strassburg, Germany.
 - (i) "Tolerance of Tissues for Foreign Bodies with Special Reference to the Pulp and Peridental Membrane," M. H. Fletcher, Cincinnati, Ohio.
3. "Professional Responsibilities," A. E. Baldwin, Chicago.
4. "The Dental Symptoms of Diabetes Mellitus," Hermann Prinz, St. Louis, Mo.
5. "Germicides," A. H. Peck, Chicago.
6. Subject to be announced, G. V. I. Brown, Milwaukee, Wis.

7. "Is the Accomplishment of Reasonable Ideals in Dental Education near at Hand?" Chas. Chittenden, Madison, Wis.

8. "The Influence of Local and General Disturbances upon the Oral Secretions," Geo. F. Eames, Boston, Mass.

9. "The Dentist in the United States Navy," Richard Grady, Baltimore, Md.

10. "Methods of controlling Hemorrhage of the Oral Cavity," H. E. Belden, New Orleans, La.

11. "Empyema of the Maxillary Sinus," O. N. Heise, Cincinnati, Ohio.

12. "Medical and Dental Libraries," Alice M. Steeves, Boston.

13. "Orthodontic Facial Orthopædia," W. E. Walker, New Orleans, La.

M. L. RHEIN, New York City,

Chairman.

EUGENE S. TALBOT, Chicago,

Secretary.

AMERICAN DENTAL SOCIETY OF EUROPE.

As arranged, the Executive Committee met in Paris on December 20, Dr. Aguilar, the chairman of the Local Committee, and secretary of Section (XII.) on Odontology, of the International Medical Congress, met with them.

It was decided to accept the invitation extended to this Society and to join the Congress *en bloc*, and thus merge our meeting into that of the Section on Odontology, to be held at Madrid, Spain, April 23 to 30, 1903. The official notes have now been exchanged, and we are assured of a most pleasant season of work and pleasure while in Madrid.

At the suggestion of the American Dental Society of Europe, it was decided to have all papers in the same language read consecutively at a specified time, thus retaining the proper interest due to them and conserving the time of the members. The discussions will follow on similar lines.

A number of papers and clinics have already been promised.

It is imperative that notice be given Dr. Aguilar, sending application for membership to the Congress, together with one pound sterling, or its equivalent, and instruct him to engage hotel accommodation, which cannot be obtained unless reserved without delay.

Members of the Congress travelling on the Continent obtain a reduction of fifty per cent. in their travelling expenses and a similar reduction is expected to be granted by the English railways. Friends and families of members can obtain the same concessions upon payment of about ten shillings each in addition, application for which must be made by members joining the Congress.

We wish to repeat that the Local Committee and the Spanish dental societies are doing everything in their power to insure our comfort and pleasure.

Join the Congress.

Engage your hotel accommodation.

As the other societies are working very hard to present interesting papers, it is most essential that our full strength be shown, not only in numbers, but also in papers and clinics. The friendly rivalry of this nature should be a stimulus to our best efforts.

L. J. MITCHELL,
Honorable Secretary.

KENTUCKY STATE DENTAL ASSOCIATION.

THE Kentucky State Dental Association will hold its annual meeting at Bowling Green, May 19, 20, and 21, 1903.

C. R. SHACKLETTE,
Secretary.

NEBRASKA STATE DENTAL SOCIETY.

THE Nebraska State Dental Meeting will be held in Lincoln, Nebraska, May 19 to 22, 1903, inclusive.

H. R. HATFIELD.

MASSACHUSETTS DENTAL SOCIETY.

THE thirty-ninth annual meeting of the Massachusetts Dental Society will be held in Mechanics' Building, Boston, Wednesday and Thursday, June 3 and 4, 1903.

EDGAR O. KINSMAN,
Secretary.

CAMBRIDGE, MASS.



STEWART BAILEY PALMER, M.D.S.

THE International Dental Journal.

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Original Communications.¹

PORCELAIN.²

BY HERBERT LOCKE WHEELER, D.D.S., NEW YORK.

THE origin of this substance is lost in the hopeless obscurity of the past. It is extremely ancient. So far as we know, it was first produced in China. Writers differ as to the date when it was first known. A missionary who lived long in China says it was known in the reign of Yao and Chuen, two emperors who ruled about two thousand six hundred years before Christ, according to the native historians. Some place its discovery only two or three centuries before Christ. However this may be, it is quite certain that the art had risen to a high degree of perfection by the tenth and twelfth centuries A.D., both in China and Persia. Near Nankin stands a tower of nine stories, three hundred feet high, which is entirely covered with a fine quality of porcelain; this was built about 1277. The Chinese have been very reluctant to give informa-

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read before The New York Institute of Stomatology, February 3, 1903.

tion concerning processes used by them in making porcelain, but with the assistance of modern science its composition has become an open book. The Portuguese traders were the first to introduce china-ware into Europe, and this ware was fairly well imitated in France about 1695. This was an artificial material, and was called tender porcelain, as it scratched easily. The first real porcelain produced in Europe was made by Böttger, a German, at Meissen, near Dresden, in 1703, and here he established the first porcelain manufactory in 1709.

All ceramics are composed of essentially the same elements, from a Sèvres vase to a drain-pipe, the difference being entirely in the proportion of the different ingredients. Porcelain, which is the highest product of the ceramic art, is a hard, vitreous, translucent substance produced by the fusing of several minerals in connection with clay. The materials used are kaolin, silica, felspar, and often is added potash, soda, or lime, to increase the alkaline flux of the felspar. Glass is also a compound of silica with potash, but differs from porcelain in that all its component parts, broadly speaking, are fusible, making a chemical mixture, while porcelain contains infusible elements held together by the lower fusing enamel; this is a mechanical mixture.

An excess of alkaline fluid may dissolve the intractable parts of a porcelain body—that is, the silica—during the fusing process, thus forming a soluble salt; this may explain the tendency of low-fusing porcelain, so called, to disintegrate in the mouth.

The material in all ceramics can be put under three headings: First, clays and marls; the former is kaolin, the latter calcium carbonate. Second, hardening or aplastic materials,—flint, sand, and quartz; these are all a double oxide of silica, and are infusible except under the oxyhydrogen blow-pipe. Third, fusible materials,—felspar, an aluminum silicate containing potash or soda, and sometimes lime and magnesia; bone or fern ash, which are calcium and potassium carbonate, the fern ash being much used by the Chinese; calcium, barytes, and artificial frits.

The quality of porcelain produced depends upon the skill in choosing materials and proportions so as to produce the results required. The element of time required for heating and cooling must also be taken into account. The variation in density which porcelain undergoes in fusing is not thoroughly understood. It appears to be very irregular, and in some cases loses weight much

faster than it does bulk, so that often the density of the material is decreased by firing. I shall endeavor to at least partially explain this phenomenon when speaking of the processes required for fusing porcelain inlays. It should be noted that the variation of formula in different porcelains may be entirely due to the different proportions in which the elements are mixed in Nature's laboratory, as the chemical formula for felspar varies greatly in different locations.

Porcelain teeth as made in England and America differ in the method of mixing and proportions. The English teeth are so arranged that the infusible material finely ground is held in suspension in the alkaline flux. The American teeth are a biscuit composed largely of infusible elements over and through which the alkaline flux is allowed to flow and penetrate. In the original manufacture of porcelain teeth the method now adopted by American manufacturers was used to some extent.

In the *Items of Interest* for 1901 it is stated that one Louis Beckers was the first to manufacture teeth. This is inaccurate, as the editor of that journal should have known. So far as I am able to find recorded accounts, it appears that the idea of making artificial teeth from porcelain was conceived by an apothecary, M. Duchatau, of St. Germain, France.¹ He applied to the porcelain workers of Paris in 1774, but the first attempts were not entirely a success because they failed to allow for the contraction in baking; several distinguished artists were consulted and also M. de Chemant, at that time dentist in Paris, who in 1808 published a pamphlet upon "The Advantage of the New Teeth in Entire Artificial Sets." A little later Dubois Foucou and M. Fonzi both published papers upon this subject; also Delabarre and Maurey wrote upon the subject of "Incorruptible Artificial Teeth."

In 1821 Joseph Audibran published his "Historical and Practical Treatise on Incorruptible Artificial Teeth," and gave as many as thirty or forty formulæ for their manufacture. The freedom with which these formulæ were given is in marked contrast to the attitude of some modern members of the profession who make proprietary articles of secret composition. These formulæ were all published in Fitch's "Dental Surgery," second edition, published

¹ Since writing the above the author has found a published claim that a M. Fouchard, of France, suggested and probably made artificial porcelain teeth as early as 1728.

in 1835. I do not know if the first edition, 1829, contained them or not.

Dr. A. A. Plantou was probably the first to introduce porcelain teeth in America, 1817, and later Samuel W. Stockton, Jones, White, and Dr. Wildman contributed to the perfecting of artificial teeth. These teeth were undoubtedly much higher fusing than the modern product, as they contained a much smaller proportion of fusible ingredients. A comparison of the fusing-point of the teeth upon the market at the present time may be of interest as showing the relative proportion of flux used by different manufacturers. These figures are in the Fahrenheit scale: Ash & Sons, 2264°; Sibley, 2408°; Dental Protective Supply Company, 2440°; Justi, 2440°; S. S. White, 2516°; Johnson & Lund, 2586°; Consolidated, 2624°; Dental Supply Company, 2624°.

I believe lime is added to the flux of the English teeth, which of itself will produce fusion at a lower heat than a potash flux. The silica in the S. S. White teeth, being ground to a less degree of fineness, gives them that appearance which a better refraction of light produces. That a porcelain tooth takes a polish easily after it has been ground does not necessarily prove that it is less porous; it may be due to the mechanical or crystalline structure of the harder tooth, the intractable crystals of silica not polishing away as rapidly as the softer flux. Any tooth of fine texture, like those made by the Consolidated or the Dental Supply Company, or the English teeth, will polish readily if first an Arkansas stone is used and then it be polished on the lathe with an impalpable silica powder.

As to inlays, which fad seems to be in the ascendancy just now with a specialty given to fads, there are two methods of making,—fitting a baked piece to the cavity and using the matrix of platinum or gold. The oldest one is to grind from an already baked porcelain a piece to fit the cavity; this method is first described by Dr. A. J. Volck in the *American Journal of Dental Science* for July, 1857, wherein he credits the suggestion to Professor Maynard, of Washington. These inlays were set in the cavity, leaving a narrow space around the edge, between the cavity wall and the porcelain, which was filled with gold. The walls of the cavity were to be left perpendicular, to keep the gold ring surrounding the inlay as narrow as possible. In a recent article treating upon the history of porcelain fillings, written by Dr. Bruck, of Germany, and translated by

Dr. Jenkins, it is stated that Dr. Murphy, of London, in 1837, used glass fused upon platinum as a filling. If so this is probably the origin of the low-fusing porcelain. The paper touches so lightly upon the history of inlay work in America that apparently the author is not properly posted upon the subject, or the translator, possibly, may have left out parts. Dr. Land, whom many consider to be the author of inlay work in which a matrix is used, is said to have fused pieces of artificial teeth in a platinum matrix in 1870. From this time on Dr. Land has been a persistent investigator along this line. Dr. Rollins, of Boston, has contributed much to the early knowledge of the matrix method. There are two distinct characteristics in the materials used with the matrix, high and low fusing. The higher the fusing, if the fused parts be perfectly homogeneous, the better. This is true porcelain; the low-fusing, properly speaking, is probably not a porcelain but a glass.

Of the high-fusing bodies, Close's, for continuous gum work, and a body made by Mr. G. H. Whiteley for Dr. Land, for inlay work, were the first to be put on the market. Mr. Whiteley was experimenting in this line as early as 1885; about 1889 he made up some high-fusing bodies for Dr. Land, and in 1898, at the instance of Dr. Joseph Head, he brought out and put on the market his high-fusing inlay body, which is still with us. The low-fusing materials, such as Herbst's, Ash & Sons' and Downie's, have come and gone, and the Jenkins body, which is always "just perfected" and constantly being changed to improve it, is the only one much used at present. The body made by Mr. Whiteley is still as much in use as any upon the market, though the S. S. White Company, Mr. Brewster, the Consolidated, and Ash & Sons are making a good high-fusing material also. The latter two fuse at a lower heat than the others, hence the colors burn out more readily. The Ash Company claim their high-fusing body requires more heat to bake than their teeth. This is a mistake, as a comparison of the fusing-points will show. High-fusing porcelain bodies for inlay work are of exactly the same materials as American teeth, but the proportions are changed, more alkaline flux being added. To a certain point this may not make much difference in the working qualities, or its durability in the fluids of the mouth. As you increase the amount of alkaline material the ease with which it combines with the metallic oxide becomes greater and the color becomes more fugitive. This process results in the formation of a gas or gases,

and contributes largely to the bubbling or blistering of the inlay. This is why low-fusing body is more apt to lose color in fusing. In proportion as the fusing-point is raised the color becomes more stable. That body containing material ground to a greater degree of fineness, the proportions being the same, fuses at a lower heat, because, the infusible particles being extremely small, the flux blows over them when in a less plastic state, hence it is unnecessary to carry the heat to so high a point. The superior strength of the high-fusing material is due to the greater inherent strength of the intractable or non-fusible particles contained therein, and the greater the proportion of these elements the stronger the resulting substance, so long as there is enough fusible material to produce thorough homogeneous fusing of the matrix-forming flux.

The presence of silica in sufficient quantity and of a proper degree of coarseness gives stability to the mass during the fusing process and lessens shrinkage, making it easier to shape the inlay to conform to any particular outline. I doubt if a concavity which it is desirable to produce to harmonize with certain depressions in a tooth can be made with any low-fusing body except by grinding and reglazing. Under the microscope the higher-fusing bodies do not necessarily show a greater porosity than the low-fusing; it is simply different. In the first the air-spaces are irregular in shape, of varying sizes, and fewer in number, thus breaking up the rays of light better and giving a superior refraction. The edges when broken also show a clear-cut crystalline arrangement with sharp angles. In the latter the air-spaces are of small, even appearance, more numerous, similar in shape and size, and are better for the absorption of light, causing the peculiar dead color of the "porcelain enamel." Ordinary glass has about the same air-spaces, both in number, shape, and size, when examined under the microscope, as this latter material.

The appearance of the low-fusing body resembles glass fully as much as it does porcelain. It has neither the crystalline appearance nor the sharp angular edges where it is broken. I would suggest that the melting-point of gold, which is near 2000° F., is not necessarily the line of demarkation between high- and low-fusing body, but the melting-point of a good quality of felspar would be a better standard, and that it is not a question entirely of high or low fusing but of using the least amount of flux possible, in order to better retain the colors and to make it as little liable as need be

to disintegration in the fluids of the mouth. I consider that it has never yet been proved that a body containing only those ingredients which are easily fused will not soon show signs of disintegration in the mouth. It should be borne in mind that kaolin is but the remains of disintegrated felspar which has become decomposed by long exposure to the atmosphere. In proportion as artificial flux is added to a body the tendency to unreliability increases, for if felspar be the base, as I understand it is in some low-fusing bodies, the whole mass is fusible and becomes glass, which will disintegrate sooner or later in moisture; if silica be present, though infusible itself, it may be rendered fusible by excess of alkali, and again you will produce glass, which as yet has not proved durable. It is not impossible that a glass may yet be produced which will meet the requirements obtaining in the mouth, but I shall doubt it until better evidence than is now at hand is produced.

In a high-fusing porcelain the strength is increased with the addition of infusible material. The crystalline silica may be said to act as a framework which would give strength and stability to the weaker material used as the flux or enamel. On the other hand, as the quantity of potash is increased the strength of the mass is proportionately diminished. If the silica is left too coarse, you get a rough or granular surface, which in some instances proves a weakness to the edge strength. Dr. Bruck claims that an analysis of the Jenkins powder shows it to be almost identical in composition with a high-fusing porcelain, the variation being very slight. This is not impossible, and yet the material might be a glass, for if all the ingredients were melted because of a change in proportions it would not be a porcelain, though containing the same elements. The claim that it is more dense has no relationship to its durability or strength.

Dr. Moffatt says, in a recent article in the *Dental Summary*, that porcelain enamels, so called, are nothing more nor less than a solution, when fused, of silex in glass.

The fusing-point of the different inlay materials used in the teeth will show, to some extent, the proportionate amount of alkaline solvent used. All these figures were given me by Mr. John F. Hammond, the maker of the Hammond electric furnace. The low-fusing bodies are as follows: Ash & Sons, 1544°; Jenkins, 1544°. The high-fusing: Whiteley's, 2210°; Consolidated, 2192°; S. S. White, 2300°; Close, 2300°; Brewster's body, 2210°; Brewster's

enamel, 2084°; Moffatt's body, 2047°; Parker's, 2586°; Ash & Sons, 1904°.

In a recent number of the *Items of Interest* appears a paper in which, in the caution advocated in the beginning, there are some very reasonable and timely statements, but as one follows it along it is seen to contain much misleading sophistry. I will quote from it to show how reckless the advocates of "porcelain enamel" have become in their published statements. It is there stated that the feeling throughout the country that high-fusing porcelain is the most reliable has come about by the constant repetition of a few writers favoring high-fusing bodies.

It seems to me if he would put the proprietary name of "Porcelain Enamel" in place of "high-fusing" he would have described the case more accurately. Apparently a number of the enthusiastic supporters of porcelain enamel who have written or said much in its favor, with the exception of one or two like Dr. Gillett, have a personal interest in the commercial success of the manufacture of this powder. He also claims that the porcelain enamel is stronger. This hardly seems to be the fact. I am informed that to get its greatest strength it must be fused until it loses shape. The statement that the depth of the cavity increases the tendency to distort the matrix would need to be qualified in order to be accepted; but if this were so the gold matrix would bend much easier than the platinum after burnishing. And porcelain enamel draws into spherical form more readily than high-fusing body, and shrinks more. If annealed in the electric furnace platinum may be made thoroughly soft and pliable. The claim that as porcelain enamel will scratch glass it is therefore of great density, is entirely misleading. The density of a diamond is but 3.5, while mercury is 13.6, lead 11.3, platinum 21.4; this shows what density has to do with hardness. And finally, in order to advocate the porcelain enamel as superior in large cavities, the gentleman proceeds to juggle with the word inlay in order to give it a limited meaning, claiming that as it means a shallow body the high fusing supporters intended that material only for shallow cavities. Had the gentleman carefully read an article in his own journal antedating his own, he would have found where the earlier writer used the word enamel for shallow cavities and inlay for the deeper ones. It is my belief that in most cases where the condition of the patient and the attending circumstances permit, permanency is the most desirable

thing in a filling. The high-fusing bodies have been in use for a long term of years, with little or no change in their composition; and have, when properly made and baked, and inserted in those places where indicated for æsthetic reasons, proved their utility as tooth-savers, as well as being the most harmonious and artistic imitation of tooth-structure that can be used.

The low-fusing body also originated some years ago, but so far, with the possible exception of the Porcelain Enamel, has proved a failure. This latter material, according to the statements of its author, has undergone numerous changes of formula, each change perfecting it, and yet experience apparently demonstrating the need of a further change. Under these circumstances, while I would not say that a low-fusing porcelain or glass cannot be produced that will prove durable, it seems the part of wisdom to use this material with a great deal of caution and only in those places where it can be carefully watched, until the time when the evidence in its favor is much less open to question than at present. It also seems to me, after a careful study of the written opinions of many disinterested writers who have used porcelain, that its use is limited under any circumstances, and that its physical qualities and methods of insertion are such as to make its accuracy of fit and durability very uncertain in complicated cases. It is also not impossible that as the fluids of the mouth vary in their composition in different individuals, so may the tendency to disintegration of porcelain inlays vary in different mouths.

Therefore it would seem that the question whether to use or not to use porcelain as a filling-material resolves itself into this form: Is the material durable in the conditions in which it is placed? And can the average individual, granting that a high-fusing material may be permanent, readily acquire the necessary skill and judgment to apply it with the greatest possible perfection, which is required to insure permanency, considering the limited call there must be for its application, until it has been more generally demonstrated that it has more qualities than the one of being æsthetic to recommend it to the careful, conscientious practitioner?

ASEPSIS AND THE STERILIZATION OF INSTRUMENTS.¹

BY SAMUEL A. HOPKINS, M.D., D.D.S., BOSTON, MASS.

To practise aseptic dentistry is impracticable, if not impossible, but to sterilize instruments after using requires no especial knowledge or skill. It does, however, call for moral backbone and for character of the highest type.

The practice of dentistry has always called for the exercise of extraordinary strength of character and honesty of purpose, for the patient is almost at the mercy of the operator and can have but the slightest understanding of how well or how badly he does his work. A plausible liar can fool his patients for years, but he doesn't like to meet members of his own profession, and generally stays away from dental society meetings, lest his dishonesty be discovered.

A high moral standard has always been an essential to dental practice, but never has the advice of Polonius, "To thine own self be true," been more applicable to the dental profession than since the advent of bacteriology made the sterilization of instruments a responsibility from which we have no right to shrink.

We know—have known for years—all about the sterilization of instruments.

We know, and have known for years, of the possibility of transmitting the germs of syphilis, of tuberculosis, and of other diseases by means of unclean instruments. We have known of the ease with which pus-producing forms can be carried on the mouth-mirror and instruments, and by the hands.

We know that the cotton with which we have wiped out an abscess or which we have taken out of a suppurating tooth is often left on the table or falls upon the floor, and we know that in its meshes are perhaps millions of staphylococci, and perhaps streptococci, capable of giving rise, under suitable conditions, to abscesses of a serious nature.

We need not be told that the mouth-mirror in our examining-room should be sterilized whenever it comes out of a patient's mouth and before it is used for the next examination. Our con-

¹ Read before the Harvard Odontological Society, November 20, 1902, and before the American Academy of Dental Science, February 4, 1903.

science pricks us every time we rinse it off and wipe it, and say, "I guess that's clean," for we know that we have taken a chance of introducing some germ into the patient's mouth that was not there before.

All this knowledge has become so familiar that we deem it almost commonplace.

Most of us long ago accepted the germ theory of disease. We have firm faith in the doctrine that many diseases are occasioned by living micro-organisms that usually find their way into the body through the mouth.

Even the most rigid and sceptical homœopathist (whose principles we respect, though we may not accept them), even the most ardent Christian Science crank, prefers aseptic surgery to a surgical operation performed amid filthy surroundings and with unclean instruments. And this preference he can scarcely show without admitting that bacteria are the exciters of disease.

How comes it, then, that a large body of educated men, many of whom have received special instruction in bacteriology, should be careless in their application of asepsis to their professional work? How is it that a body of men who probably put forth more conscientious, painstaking labor in the course of the average day than any class of men in the community should fail to include in their high moral code a practical plan for the sterilization of instruments?

How is it possible for a man with well-developed moral fibre, such as most dentists possess, who is honest in every detail of his work, who is constantly sacrificing his own convenience and giving his strength and health for the good of mankind,—how is it possible, I say, for such a man, knowing what bacteria are, how they may be transmitted, and what evils they may produce, and knowing, too, how to prevent these evil results,—how is it possible for any dentist to neglect any precaution that will protect his patient from the remotest possibility of infection?

It does seem strange that there should be a single dentist left who does not take the precaution necessary to protect absolutely his patients against contamination, but I am afraid we must admit that many of us are guilty of occasional sins of omission. You have only to watch a clinic at any dental society meeting to see an illustration of my meaning. Usually at such meetings there are no wash-bowls provided where a man may wash his hands. Mouth-mirrors are carried in the waistcoat pocket, and are thrust from

one mouth into another with no attempt at sterilization and only an attempt at ordinary cleanliness.

The hands of the seeker after truth are thrust first into a mouth where a clever piece of bridge-work is on exhibition, and with only the most rudimentary attempt at cleanliness proceed to examine a mouth afflicted by cancer.

The fact that the sterilization of instruments has not become general among dentists is, I think, pretty clearly shown by the fact that the most important dental societies in the State, and in the country, when holding conventions and giving clinics, fail to provide means for even the ordinary cleansing of instruments, and leave the clinicians to depend on such antiseptics as they may have at hand.

Do not misunderstand me. I am not here to berate the profession nor to bring accusations of neglect of duty. I am trying to picture the condition of affairs as I see it to-day in many schools, in many offices, and in the public clinics given by our dental societies. Let us be honest with ourselves, and admit that the picture is not greatly overdrawn, and let us seek the explanation. The average dentist is an eminently practical person. Show him a way by which he can improve the condition of his patient's mouth, and no consideration of self and no thought of the trouble involved will prevent his adopting that method. He is so intensely practical that there is danger of his becoming empirical.

In the matter of asepsis, the busy dentist has many excuses for not being greatly impressed by the necessity for sterilizing his instruments, and when all things are considered, it must be confessed that the number of known cases where infection has been carried by dental instruments is comparatively small. We know that, so far as septic infection is concerned, the mouth, owing to its enormous blood-supply and the abundance of leucocytes in the tissues, is more resistant than any other part of the body. This is not due, as many suppose, to any antiseptic property contained in the saliva itself. There may, and probably do, exist in the mouth secretions many non-pathogenic bacteria that excite the leucocytes to action, and in this way protect wounds from pathogenic or pyogenic micro-organisms. This probably explains why animals lick their wounds. Human saliva, when sterilized, not only has little retarding action on bacteria, but acts as a very good culture medium for many forms. If it has any power to protect against the inroads

of disease, that power lies in the non-pathogenic bacteria which it contains.

We have been accustomed for generations to perform, and to see performed, operations in the mouth which, if undertaken in any other part of the body without aseptic precautions, would result in abscess, septicæmia, or lock-jaw.

Suppose you made such a wound in the foot, leg, or arm as is ordinarily made in the mouth by the extraction of three or four teeth, what would become of the patient if it were allowed to fill up with all sorts of foreign matter and remained untreated? It would naturally result in an unprecedented boom in cemetery lots. Yet we see these great excavations in the mouth, ragged edges of gum tissue, fractured alveolar process, all caused by the extraction of a tooth, and all healing without the slightest treatment or the least suggestion of cautionary measures. Food particles fill up the wound; armies of bacteria flourish, multiply, and die; all the fluids of the mouth find their way in and assist in maintaining an active process of fermentation or putrefaction; and yet, even in the filthiest mouth, after extraction by the filthiest dentist using the filthiest instruments, we are bound to confess that serious results seldom follow such operations.

I am not pleading for lack of cleanliness, but I wish to be fair, and to show why dentistry has not pinned its faith to aseptic operations, as surgery is obliged to do. We have not felt the necessity, and we are practical enough to know that the risk isn't really very great if we don't strictly sterilize our instruments after each patient.

We know too, even if it has not been carefully explained to us, that the great safeguard against bacteria, the impenetrable wall against which the germs of disease may dash themselves in vain, is sound, healthy, and unbroken epithelial tissue. Whether it be in the mouth or upon the surface of the body, healthy epithelial tissue forms an impassible barrier to all forms of bacteria. We know, however, that while this is a safeguard to be trusted, it is not to be fooled with, for we know that blood-poisoning frequently follows a wound too small to have been noticed, nor can we ever be sure that in the mouth the epithelial covering is not broken or congested and ready for the admission of bacteria.

Surgeons have been known, time and time again, in the frenzy of their devotion to the scrubbing-brush, to so scrub away and irritate the epithelium of their hands and arms as to invite the en-

trance of bacteria, and many septic fingers and arms, as well as general and fatal poisoning, have followed this vigorous but ill-judged adherence to the principles of aseptic surgery. This has resulted in the use of rubber gloves among surgeons to a certain extent. There are certain advantages and certain disadvantages in the use of the rubber gloves by surgeons, but for the dentist the gloves are hardly to be thought of except in dealing with a syphilitic or other infectious case. On the whole, we have reason, I think, for believing that in view of the vast number of dental operations performed, the evidence that can be gathered would hardly show any great number of cases wherein disease has been carried by dental instruments, and it is for this reason, and for the other reasons I have alluded to, that the practical dentist has not shown an active interest in the lessons bacteriology teaches, and has failed to seize with avidity the idea of absolute protection to his patient by means of sterilized implements of practice.

Nevertheless, the idea demands our respect, and the knowledge we have acquired in the past twenty years in relation to the transmission of disease by bacteria places upon us a responsibility so grave, so sacred, that to neglect it is scarcely less reprehensible than to become a contributing party in a case of manslaughter.

Do not let us shirk this responsibility, but let us face it with the will and power which have characterized all advances in this profession. You know, and I know, that the fact that infection by means of dental instruments is unusual should not enter into this question at all. In England, where chloroform is used as an anæsthetic, it has been estimated that one life is lost in every five thousand cases operated on. We can conceive of circumstances where, knowing this danger, it would be good judgment to use chloroform, as, for instance, in operating at night, when the danger of setting fire to ether must be considered, or in cases where the retching and vomiting following ether would endanger the success of the operation. We can easily justify such a risk and continue to confide in the judgment of the surgeon, in spite of fatal consequences. On the other hand, suppose the risk of fatal consequences in using an unclean—and by that I mean an unsterilized—knife was only one in ten thousand; I am not sure that the actual risk is greater; but would any one condone a surgeon's action in using such an instrument, when boiling water and other means of sterilization are to be had for the asking? Have we not a right, in view

of our present knowledge of bacteriology, to regard the surgeon guilty of manslaughter who contributes to the death of a patient by using an unsterilized knife? Let us bring this home to ourselves. Can we ever be sure, in using an unsterilized instrument, that we are not conveying a disease germ to our patient's mouth, and can we be sure that the germ so conveyed will not find the conditions ripe for its development and for the propagation of disease?

I have recently completed some experiments upon the micrococcus tetragenus, the staphylococcus pyogenes aureus, and the micrococcus lanceolatus or croupous pneumonia germ, which show beyond question that these forms vary greatly in their virulence in different mouths. These experiments bear on the question of sterilizing instruments in this way: It can be fairly inferred that a bacterium which is quite inactive and harmless in one mouth might, when transferred to another, find conditions which would cause it to become exceedingly virulent and a menace to health. Moreover, the dental profession has, with few dissenting voices, accepted Miller's theory of the bacterial origin of caries. At present we do not attribute the formation of lactic acid to a particular micro-organism. I have, myself, isolated sixteen different forms from the mouth, capable, under favorable conditions, of producing this acid, and it is said that there are not less than a hundred forms of bacteria in existence that have this interesting property. We cannot tell as yet what forms would be active in one mouth and what would be active in another, but we are pretty sure that in excavating a carious tooth preparatory to filling, our instrument has come in contact with some form that, transferred to another mouth, might give rise to caries.

Are we then justified in taking the risk of introducing that micro-organism into the mouth of our next patient by a failure to sterilize that instrument?

Besides the common mouth forms, besides the lactic acid producing forms, we know that the germs of nearly all diseases enter the system through the mouth. They come with food, water, air, and from the fingers thrust into the mouth.

I fancy that it is true that disease germs are generally harmless, and I mean by that it is probable that most of us have again and again in our lives taken in the germs of typhoid, or some other serious disease, and yet, because the system was not in a condition

to be affected, or because the culture material was not right for its development, it died out without producing the disease. Yet in spite of this immunity (upon which we can only speculate, since we have no way of determining), we decline to receive disease germs into the system if we can by any reasonable means avoid them, and if the sterilization of dental instruments will in any way lessen the possibility of transmitting disease, we have no longer an excuse for declining to take this trouble.

Now, as to how to sterilize the instruments. The methods are simple and familiar. If we once accept the responsibility and go about it with the determination to do our duty, there will be no difficulty about ways and means. You cannot improve much over boiling in water to which a pinch of washing soda has been added to prevent rusting. Fifteen minutes will destroy any bacterium likely to be found in the mouth. It will not, however, always destroy spores, which are extremely resistant to heat and to chemical agents. Still, I think we may ignore spores, for two reasons: in the first place spores are only developed on old culture media after the chief ingredients which nourish the microscopic plants have been exhausted from the soil, and in the mouth we have few such conditions. The soil or culture medium in the mouth is constantly being renewed, and there is unceasing activity of growth which precludes the likelihood of spores being developed. Secondly, the coccus forms which predominate in the mouth do not produce spores. If spores develop, it will generally be because the instrument has been laid away for several days before sterilizing.

Boiling water will effectually sterilize dental instruments. There are, however, many dental implements which cannot, without injury, be submitted to boiling water, but these can be sterilized quickly and effectually in a formalin oven. The Schering formalin sterilizer and lamp are probably familiar to you all. If you wish me to be accurate, I will say that in experiments which I have made, instruments kept in the oven for ten minutes, with three small or one large pastile burning, showed no growth at the end of twenty-four hours, when placed in bouillon tubes; a slight growth was noticed at the end of forty-eight hours. Similar instruments not sterilized showed distinct growth in twelve hours, and profuse growth of many varieties in twenty-four hours. Instruments kept in the oven for fifteen minutes showed no growth. Fifteen minutes may therefore be considered effectual.

One thing is to be said about the use of formalin: the instruments should be both clean and dry before being put in the oven. By clean, I mean that there should be no dried blood, bits of carious tooth, or other unclean substances on the instruments, since the formalin gas will not penetrate deeply nor will it prove effective on wet surfaces. If you use formalin, the best way to manage is to have the formalin oven in your office. You have a perfect right to inspire confidence in your patient by doing the sterilizing under his eyes. It is a good way to make public opinion. When our patients refuse to patronize a man who is untidy, and who does not sterilize his instruments, the reform in dental practice will come quickly. When you have dismissed a patient, give the instruments to a trusty servant to wash and wipe dry, and then put them into the sterilizer. It is better not to leave the lamp burning longer than is necessary to convert the pastile into gas, as the heat generates moisture, and there will be a sweating process which will rust the instruments and the oven as well. Often this is unavoidable, and there is a deposit on the instruments resembling dust, which must be wiped off with a sterile napkin.

It is a good plan to have your boiling water also in your office. A shelf can be constructed sufficiently high, so as to be out of the way of small children, and a Bunsen burner, connected with the neighboring gas-jet, a lamp, or an electric heater, as the case may be, placed on this shelf, and over this a pot of boiling water may stand all day, and the instruments be placed in it. It is better, for convenience in handling, to have a wire basket with a solid bottom, and to place the instruments in this. The basket can be placed in the boiling water and removed with little inconvenience and no danger of burning the fingers. It is more convenient to have both methods at hand, and there is scarcely any expense attached to either. The office itself should be well sterilized from time to time, and this may be done by burning formalin. You close the windows tightly, pull out the drawers of your instrument case, put a half-dozen pastiles in the cup of the lamp, light the lamp, close the door, plug up the key-hole, and leave it until the following morning. You will find an odor of formalin, and your eyes and nose will tingle when you first enter the room, but five minutes with an open window will remove the odor, and the place will be wholesome, sweet, and sterile. I have tried any number of experiments to prove the efficacy of this method of sterilization, and I can

assure you it is most effective for superficial sterilization. At the Medical School I had a room to work in that contained about eight hundred cubic feet of space. Three or four fresh formalin pastiles would render the place so sterile that the dust on the shelves (and the place was covered with dust) could be brushed into a tube of bouillon and the tube set in the incubator without any growth showing itself.

The need for general office sterilization arises because the fingers in picking up an instrument from the cabinet or tray may come in contact with other instruments, things will drop on the floor, and the air of the room is likely to become contaminated. You are sure of clean instruments and clean air if you sterilize your room every night, but you must always remember that formalin has not the power of penetration that it was once supposed to have, and must be looked upon as a surface sterilizer. For this reason the instruments should be washed and dried first. This is especially true of burs and files. The hands cannot be rendered absolutely sterile without an expenditure of time and trouble which is out of all proportion to the necessities of the case, but they may be rendered practically sterile by the use of permanganate of potash, or, better still, by a new preparation called Sublamine.

It is an ethylenediamine-sulphate of mercury, about as powerful as the corrosive sublimate, but does not irritate the hands. It dissolves well in water, can be used with soapsuds, which is not true of the sublimate, penetrates deeper, and leaves the hands smooth. After infective material has touched the hands they should always be washed in sublamine. We may as well give up the idea of strictly aseptic dental operations, because we cannot possibly sterilize the mouth, and the moment an instrument enters it becomes contaminated.

The public, however, has a right to expect security against the mouth bacteria of others. Our patients are only reasonable in demanding that they be not exposed to the germs contained in the mouth of the patient that preceded them, and it is our business to insure them this immunity, but to practise aseptic mouth dentistry or surgery is often beyond the limit of our skill. I know of no method of destroying the bacteria in the mouth that will not also destroy the patient. I say this soberly after years of experimentation. I continue to use antiseptics in all cases where suppuration occurs, and am convinced that they do an immense amount of

good, but I have never been able to keep a mouth in a strictly aseptic condition for ten minutes at a time, and for our purposes it is not necessary, nor am I sure that it is altogether desirable, that the mouth should ever be sterile. For the ordinary operations in dentistry our responsibility ends when we have given a definite assurance that we are not conveying to the mouth of any patient a bacterium that was not there before. For surgery and for extractions we will naturally take all the precautions possible to lessen the danger of infection from germs that exist in the patient's own mouth, and here we may gain much from the use of suitable antiseptics.

I am proud to be able to say, in closing, that in both of the dental schools in Boston effective measures are taken for the sterilization of instruments, and every boy in these schools has impressed upon him the necessity for thoroughness in this particular.

As soon as the necessity is generally appreciated public opinion will demand, in no uncertain voice, protection at the hands of the dentist, and the laggard dentist who is content to take his chances and run for luck will find himself supplanted by these young men from our dental schools, who understand their moral responsibility and have backbone and determination enough to practise with clean implements, clean hands, and a clean conscience.

HOW FAR DO STOMATOLOGIC INDICATIONS WARRANT CONSTITUTIONAL TREATMENT?

BY EUGENE S. TALBOT, M.D., D.D.S.

THE alveolar process as a transitory structure through its relations to the trophic and vasomotor nerves is very susceptible to systemic impressions. The alveolar processes are terminal structures. The nerves and arteries passing through the alveolar process stop when in contact with the roots of the teeth, which fact, together with the transitory nature of the process, makes it doubly susceptible to the influence of interstitial gingivitis.

The alveolar processes and gums are frequently the structures first involved in disease. The most decided instances where deep-seated morbid states find expression in changes of the gums and alveolar processes are those due to lead, mercurial, and brass poi-

soning, anæmia, syphilis, diabetes, tuberculosis, renal disorders, scorbutus, etc.; in these the local stomatologic state is necessary for a complete diagnosis. In such cases local irritation or tissue nutritional disturbance from constitutional causes produces local tissue change by mechanic and chemic action (lactic and uric acid irritation from auto-intoxication and drug poisoning). Through such action blood strain increases and capillary dilatation results. The capillaries become crowded with blood-corpuscles which accumulate along the walls of the blood-vessels, to which they seemingly adhere. The accumulations of small round cells occur in the submucous tissue, the spaces of which are filled with inflammatory exudate. The papillæ become enlarged, the epithelial layer becomes hyperplastic, the gum tissues swell, become intensely crimson, and bleed upon the slightest touch. If the irritant factor be temporary in character and local in action, slight gingivitis results. If the irritation be permanent, the gingivitis becomes chronic, and, extending into the fibrous tissue below, becomes interstitial in type. The extent of this latter inflammation depends upon the nature of the irritation. If the irritation be located upon the side of one tooth, the inflammation extends to the fibrous tissue along the course of the blood-vessels. It may be in line with the peridental membrane, the periosteum, or in direct line with the alveolar process. Interstitial inflammation (should one or more teeth be involved) extends not only through the peridental membrane, but likewise to the periosteum and alveolar process, since the capillaries in surrounding structures are involved. The inflammation extends into the alveolar process through the Haversian canals and the blood-vessels of Von Ebner by way of the periosteum and peridental membrane. Irritation thereon resultant causes absorption of the alveolar process by (*a*) halisteresis, (*b*) Volkmann's perforating canal absorption, (*c*) lacunar absorption (osteoclasia). Interstitial inflammation continues as long as the irritation remains or until the tooth or teeth exfoliate. Occasionally bone necrosis results. Previous irritations often produce osteomalacia and trophic changes, thus assisting pathologic progress. Endarteritis obliterans, alveolar process absorption, pyorrhœa alveolaris, and, finally, calcic deposit may complicate these conditions. Endarteritis obliterans may result through thickening of one or all coats, thus interfering with the blood circulation. This results from the toxic element in the blood and degeneration of the peripheral nerve. Pus infection

then readily occurs. Circulation being impaired, the calcic deposits from the blood do not occur directly, but around the Haversian canals (halisteresis) and through the vessels of Von Ebner; bone absorption is rapidly occurring; calcic material from the alveolar process is thereby deposited directly upon the roots of the teeth. Such are the stomatologic indications which warrant constitutional treatment.

The effect of drugs producing inflammation and destruction of the gums and alveolar processes depends upon the etiologic moment, which is made up of the general constitutional character of the patient as well as his condition at the time of drug administration. As the alveolar process in certain toxæmias (due either to drug action, to auto-intoxication, or to nutritional disturbance) serve for elimination purposes, of necessity products eliminated tend to pass through these processes when elimination elsewhere is insufficient. When elimination has once taken this direction a predisposition to such elimination thereby occurs. If in early life scorbutus, peliosis rheumatica, phosphorus poisoning, or any condition producing sialorrhœa have occurred, in later life drug administration is peculiarly apt to set up inflammatory irritation. Drug administration is hence apt to have untoward irritant effects in such subjects. These, as Rabelais long ago pointed out, may result as notoriously in the case of mercury, in interstitial gingivitis with tooth exfoliation. The same conditions appear as the untoward effects of other drugs.

SOME CONSIDERATIONS PERTAINING TO DENTAL DIAGNOSIS.¹

BY JOHN C. CURRY, D.D.S., PHILADELPHIA.

IN his work on "Oral Surgery" the late Professor Garretson closes his chapter on diagnosis with this remark: "Complexity resolves itself into simplicity through understanding; to see into a pot requires never anything but the lifting of the lid." Understanding is arrived at by deductions based on study and observation. "I do not know . . . I will investigate," says Pasteur.

¹ Read before the Academy of Stomatology, Philadelphia, December 23, 1902.

“The process” (of diagnosis), says Butler, “is thus seen to consist of two elements,—observation in its broadest sense, and reasoning applied to the results of the observation.”

To determine the nature of a pathological condition is the first step in the treatment of disease, whether it be apparent or obscure. Without knowledge, all cases are obscure, and even with understanding not all are easy of solution, but most of them are possible.

Some one has said, “Poets are born, not made.” So are diagnosticians, with this difference: Poets are capable of expressing what they themselves feel, while the diagnostician must be able to tell what *others* feel, and why, which, after all, is not so difficult a matter if one is able to take into account the various considerations pertaining to a given case.

Diagnosis may be subjective or objective, or both. Subjective considerations are those arrived at by interrogation. Objective considerations are those depending on observation. Among the subjective considerations we note seat of pain, character of pain, length of time it has been present, history of previous trouble, if any, and family history. Objective considerations would include age, sex, state of health, occupation and habits, temperament and idiosyncrasy, and accident. Subjective considerations alone are least to be depended upon in making an accurate diagnosis.

When a patient presents for treatment complaining of pain, the first question naturally is, Where is your pain, and what is its character? and in nine cases out of ten the answer will depend more upon the temperament and condition of the patient than the nature of the pain.

The late Dr. Bonwill seems to have recognized this more fully than any other dentist whom I have known, for he usually insisted on his patient keeping silent while he made the diagnosis. Objectively, I think, however, most diagnosticians will agree that this method is extreme, for by interrogation we can usually get some clue on which to base further investigation.

The point I would make is that in some cases we must make a liberal allowance, while in others we should encourage the patient to describe fully his pain or inconvenience; for some patients, without intending to deceive, magnify their sufferings beyond their true proportion, in order to gain our sympathy; others, desiring to be heroic, try to “grin and bear it” without a murmur; while still another class will suffer to the utmost rather than complain,

for fear of having it thought of them that they are making a bid for sympathy. These last-named patients belong to the highly organized, nervous temperaments, sensitive alike in mind and body, slow to bestow their confidence, but unwavering in their trust when once it is given. These are the patients who should be encouraged to speak freely, for they never deceive. They are the leaven of a dental practice.

All pains in or about the teeth are usually spoken of by the patient under the general term of "toothache," and may be described as "jumping," being almost invariably found in connection with exposed pulps, either spontaneous or the result of mechanical or chemical irritation or thermal shock. A dull, heavy pain, with crisis on taking warm foods or liquids, with sense of numbness or fulness, is due to pulp congestion, usually found in vital teeth having large fillings placed too near the pulp. The pain is generally reflected to the teeth of the opposite jaw, or transferred to the ear or supraorbital region, with very slight tenderness on tapping, but not to steady pressure, though considerable force be used. Throbbing, pulsing, and lancinating pains, with tenderness to touch, indicate formation of pus, either in true alveolar abscess, phagedenic pericementitis, or abscess due to presence of foreign bodies, such as broken tooth-picks, forgotten ligatures, etc.

The uneasy, ill-defined pain, not definitely located unless the spot is actually touched, gives us at once a clue to sensitive dentine. I have known a spot of dentine no larger than a pin-head to cause neuralgic twinges that were as hard to account for as they were to endure. These conditions are especially common in strawberry and tomato seasons.

The pain, usually described as neuralgic, sharp, lancinating, intermittent, remittent, or periodic, direct, reflected, or transferred, unless accounted for objectively, is usually associated with the more obscure troubles, such as exostosis, absorption of permanent roots, or pulp-nodules, or they may sometimes be found in senile caries with exposed pulps.

All these varieties of pain vary in character and intensity according to the severity of the case and the temperament of the patient.

Family history may not have so important a place in dental diagnosis as it has in a medical diagnosis, but it may be of value in tracing constitutional tendencies, such as lithiasis, hemorrhagia,

recession of gums, abnormalities of dentition, pathological dentition, etc.

Age considerations predispose to or modify many pathological conditions from infancy to senility. Pathological first dentition is a subject on which a volume might be written. Unfortunately for all concerned, the dentist is seldom consulted in these troubles, but, thanks to what must be a special Providence, the rate of mortality is only about three times as high during first dentition as at any other period of life up to sixty years. It may be well for us to remember, however, that besides the ordinary troubles of first dentition, rickets, cretinism, and infantile scorbutus markedly retard or complicate the process of first dentition.

Pathological dentition of the permanent denture is usually confined to the third molar, the eruption of which often gives rise to troubles varying in degree from slight pain and stiffness of the maxillary articulation to crisis and trismus. The subjective symptoms are of such character as to be easily recognized if occurring at the age when the third molars are usually erupted, and are described as "uneasy pains" in the jaw, often reflected to the ear, stiffness of the joint, pain and difficulty in swallowing, and increased salivation.

In a crowded lower jaw with a short angle the third molar may erupt in such a position as to present its occlusal surface directly against the distal surface of the second molar, merely raising the gum but not coming through it. In one such case seen by the writer the patient had all the symptoms of an exposed pulp, but the closest examination could not discover one; eventually the third molar was found and the flap of gum was raised. It had presented as stated: a large cavity had formed in the occlusal surface through which the pulp had been exposed, thus confirming the diagnosis. Malposition of the upper third molar is, as a rule, back of and external to the tuberosity.

One exception to this coming under the writer's notice occurred in the mouth of a patient twenty-eight years old. She complained of neuralgic pains all over the side of the face and head, with marked soreness of the second molar, which had been devitalized two years previously. Thinking the tooth was beginning to abscess, I removed the filling and redressed the roots. No relief being obtained, the tooth was extracted, but the trouble was not relieved at once, and some other cause was suspected. As the pain

was periodic, malarial influence was considered, and she was treated by her physician, but with little relief. In a few weeks the third molar came through in the place previously occupied by the second molar, and there has been no pain since.

Sex considerations are of importance in diagnostic work, inasmuch as symptoms vary according to the conditions under which they occur. Subjective symptoms in a neurotic female are valueless, or nearly so, for they magnify sensations to pains and pains to tortures, none the less real to them, but misleading to the clinician who is trying to arrive at accurate conclusions.

The period of catamenia is often accompanied by hemorrhagic conditions of the gums and tenderness of the teeth. Pregnancy often causes similar symptoms, and in the mouths of patients wearing artificial dentures much difficulty is experienced in retaining them, owing to lack of adaptation due to swelling of the mucous membranes. These cases are rather hard to manage unless the patient owns up. In one such case the writer had the patient denied being pregnant, but a few months confirmed the diagnosis.

Neuralgias and phantom odontalgias are especially frequent during pregnancy, and by recognizing this we may be saved the trouble of removing many good fillings in teeth which in themselves are without fault.

The state of the patient's health previous to or at the time of consultation may be of great importance as a direct or predisposing cause or as a modifying influence. An attack of la grippe is almost sure to give rise to dental discomforts, sometimes followed by the death of one or more pulps. In the case of one patient noted by the writer, after an unusually severe attack of this malady, three pulps died in a few weeks, one in a perfectly sound incisor. Influenza or cold in the head causes increased sensitivity of dentine and sometimes general tenderness and soreness of the whole denture.

Specific diseases do not, as a rule, affect the dental organs except through medication. The administration of the mercurials sometimes causes salivation or mercurial ptyalism, with its attendant ills, varying from slight looseness of the inferior incisors, with increased flow of saliva and slight metallic taste, to partial loss of the inferior maxilla, with adhesions of the tongue and cheek, and in very extreme cases death. The amount of mercury taken need not influence diagnosis, as some patients are idiosyncratically opposed to the mercurial treatment.

Lithiasis or gouty diathesis is now recognized as the predisposing, if not the direct, cause of most cases of pyorrhœa alveolaris.

Chronic catarrhal disease of the nose and sinuses may be the cause of, or be associated with, antral disease, and should be closely considered in making a differential diagnosis where dental complications are suspected.

Gangrenous stomatitis is often accompanied by ulcerous patches in the mouth, which lose much of their significance if their cause and association is recognized.

Prolonged illness, such as is caused by low forms of fever, bowel perforations, etc., which compel a fluid or semi-solid diet, cause general tenderness of the dental organs through lack of use, the periodontal membrane becoming so tender that the slightest effort at mastication causes pain.

Recognized neurosis and neurasthenia is of value negatively, keeping us from putting too much credence in the testimony of the patient, cautioning us to be guarded in our statements, and admonishing us never to see them without the presence of the third person, as they are liable to form a distorted or entirely wrong conception of what is said to them. In one such case coming under the writer's notice the dentist casually remarked that he feared the patient (a lady) would lose her teeth from pyorrhœa, they were so dense and seemed so perfect; in fact, just such teeth as were liable to suffer from that disease. The patient went direct to a painless emporium and had the upper denture extracted forthwith, claiming she was so advised by her dentist. The husband threatened a suit for damages, but was dissuaded by the family physician. While the dentist was not wholly to blame, he was in a sense partially so, as he should have been able to recognize the mental limitations of a neurotic patient. Care should be used also in speaking of other practitioners before these patients, for they can never hear things straight; nor should we listen to the tales they bring us from other dentists. As smoke is to the eyes, or as vinegar to the taste, so is a neurotic patient in the experience of a dentist.

Occupation need be considered only in a general way. We would naturally refrain from using large metal fillings in the teeth of an "upholsterer" or "shoe-laster" unless the fillings had been well insulated. When a patient presents with his upper and lower incisors worn to the form of a circle, we know we are dealing with a "glass-worker," and before we repair the damage already done we

explain that he must hold his blow-pipe against his lips and not between his teeth; or, better still, we swage up metal caps to be worn over the teeth during his work-hours. The lady with checked and broken incisors is catalogued as a "seamstress," and we are on our guard for exostosed roots or dead pulps. The phosphor-worker and the looking-glass plater are specially noted for their liability to phosphor necrosis and mercurial salivation. Patients working in chemical laboratories, gunpowder-works, or other places where they are subjected to the fumes of nitric, sulphuric, or muriatic acids, especially if mouth-breathers, seldom are able to preserve their dental organs without crowning.

In many ways habit and occupation could be treated under the same heading, especially in cases where trouble is the result of mechanical irritation such as is caused by thread-biting, the holding of mechanical appliances, etc., with the teeth, all of which are liable to cause pathological conditions, such as death of the pulp, exostosis, or absorption of permanent roots. Aside from these there are habits which might be termed vices, such as thumb-sucking, which causes anterior protrusion and lateral contraction; gritting the teeth at night, causing the undue wearing of the dental organs due to reflex nerve irritation, usually intestinal; mouth-breathing, due either to polypi, adenoid growths, or congenital defects. Cracking ice between the teeth is a prolific cause of dead pulps, especially in the mouths of children. It is noticed also in the mouths of patients convalescing after typhoid, where they have been given pieces of ice to eat when partially delirious.

Tobacco chewing, though often spoken of as beneficial to the teeth, is, in the mind of the writer, open to question, both because of increased attrition and because of a tendency to erosion on the buccal surfaces of those teeth in that part of the mouth where the tobacco quid is held. It is, at least, not conducive to personal cleanliness, as we dentists know.

Accidents are the direct cause of many dental troubles and the indirect cause of not a few, and, since "accidents are bound to occur," we must give them consideration. Accidents may properly be divided into two classes,—the unavoidable, those which happen with us, and the ones due to carelessness, or those which happen with others. It might be best to speak only of the latter.

Broken jaws improperly set or dislocations not reduced are the cause of various deformities. One of the most interesting cases

known to the writer was that of a young man of eighteen, who called for treatment of a lower molar. There was a marked protrusion of the lower jaw, which was also forced to one side. Being impressed with the appearance of the case, I questioned the patient as to previous injury, when he disavowed any knowledge of any, and so did his mother, until, on second thought, she said she did remember that when he was a baby he was out where the men were milking and was kicked over and stepped on by a cow. The only inconvenience noticed at the time was a slight swelling and a reluctance to take the bottle, but nothing was thought of it.

Roots broken in attempted extraction are a common and easily detected form of trouble. Roots perforated in opening up the root-canals are a serious form of trouble, and where the perforation is near the apex it is not easy to distinguish it from a large foraminal opening, the chief diagnostic point being the character and flow of the hemorrhage.

Unbanded crowned roots which have split under stress sometimes present the appearance of true abscess. The best diagnostic point is the blueness and swelling of the gum extending to the gingival border, with tenderness confined to the affected tooth, and lack of pulsing or throbbing. Broken toothpicks, particles of filling-materials, retained ligatures, bristles from tooth-brushes, etc., need to be carefully sought for in all cases of local irritation; malocclusion caused by excess of filling-material may cause pericementitis. A broken broach or root-filling material forced through the foraminal opening may cause continued irritation until removed. In most cases diagnosis must be differential, except where the root can be entered with a Gates-Glidden drill; in such cases a magnet applied to the cuttings will attract small particles of the steel where the drill has come in contact with the broken instrument and cut it. Another diagnostic point is the slowness of the tooth to abscess or its refusal to do so unless septic conditions are present.

Carelessly placed arsenical applications are responsible for serious complications, which may be easily recognized by the appearance of the gum and the history of the case.

Temperament and idiosyncrasy influence our conclusions less in making diagnosis than in the treatment of disease. It is well to remember, however, that in the bilious bases we may reasonably expect secondary dentine to protect pulps in cavities that in the

lymphatic or sanguine bases would be exposed. We may expect pulp irritation in the nervous temperament in simple caries. The sanguine temperament will develop severe acute inflammations with slight cause, while in the teeth of the lymphatic we often find dead pulps in simple cavities without the history of a single pain.

Idiosyncrasies noted from the stand-point of the dental diagnostician are few, but pronounced. Occasionally we find patients who seem immune from arsenical impress. Some cannot indulge in a single dish of strawberries without suffering agonies from sensitive dentine; cocaine in the smallest doses will produce dangerous symptoms in some cases, and cannot be administered at all in others; morphia is so little used in dentistry that the dentist need scarcely consider the peculiar idiosyncrasy sometimes found in connection with it; mercurial idiosyncrasies have already been mentioned except in the cases of ptyalism caused by vulcanite dentures and amalgam fillings. These cases I leave to the discussion of my high-potency brethren, for I have yet to see my first case.

Reviews of Dental Literature.

ABSTRACT FROM AN INTERESTING PAPER ON THE THERAPY OF VARIOUS FORMS OF LIGHT AND RADIO-THERAPY. By James MacFarlane Winfield, M.D.¹

After careful search through the literature of radio-therapy it is safe to assume that over ninety per cent. of the cases of lupus treated by this method are cured. Only two cases have come under my personal observation; both were cured after twelve exposures, and have remained well for nearly a year.

The results in lupus erythematosus do not appear to be as good as those treated by the Finsen light.

Judging from the reports, radio-therapy has a beneficial and curative effect in about seventy-five per cent. of epithelioma, including rodent ulcer. My experience is about the same.

¹Lecturer on Dermatology and Chief of Clinic at the Long Island College Hospital, etc.

At present I have under treatment an exceedingly interesting case of epithelioma, in a man eighty-one years of age. The cancer involved nearly the whole of the under lip. The universal opinion of the surgeons consulted was that it was an inoperable case, because of his age and the existence of a severe and far advanced Bright's disease.

The malignant growth had been aggravated by the application of caustic pastes so that when the ray was first applied the lip was a foul-smelling, suppurative mass. After the third application the discharge ceased. The ray has been applied twenty-six times, the average duration of sittings twelve minutes, and now the disease is practically cured.

The results in carcinoma, especially post-operative, are sufficiently good to warrant the following up of the surgical measure by the X-ray, and from the reports of careful observers radio-therapy should be employed in all cases of inoperable carcinoma.

During the past year I have used the ray in six cases of cancer of the breast, two primary and four post-operative. The first two received, respectively, four and eight exposures of ten minutes' duration, extending over a period of three months; in the one receiving four treatments the size of the tumor remained stationary, while previously it had grown rapidly.

In the other case the tumor began to diminish in size after three exposures; when she was last seen it was at least one-half smaller than before treatment. As these patients were hard to control, they were finally lost sight of.

In the four post-operative cases one died from exhaustion after only a few exposures to the ray; in one the skin and cicatrix were thickly studded with new growths; after twelve exposures the small tumors had entirely disappeared and the large ones were greatly diminished in size. The patient is still under observation, and although the ray has not been applied for nearly four months the malignant process does not seem to be making any headway.

The third case of inoperable carcinoma is interesting because it shows microscopically that the X-ray inhibits the growth of the carcinomatous cells. Six weeks after operation the patient was referred to me for treatment because of a rapidly growing tumor situated just outside of the cicatrix. The growth was hard and showed unmistakable signs of malignancy; decreased after eight treatments; then, for unavoidable reasons, the exposures were sus-

pended for nearly three weeks. When the patient again presented herself it was found that the tumor had nearly doubled in size, and the overlying skin was inflamed (not, however, an X-ray dermatitis); surgical procedure was advised, and a second operation was immediately done; the growth was found to consist of broken-down material, and scattered through the adjacent fascia and deeper structures were numerous hard nodules; everything that appeared suspicious was removed and sent to the pathologist without any comments regarding the case or reference to the ray treatment; he reported that undoubtedly the tissues were carcinomatous, but they showed evidences of having undergone some peculiar change, which had stopped the cell growth. A similar observation regarding the power of X-ray over carcinomatous cells has recently been made by Mr. Stephen Mayou, an English physician. My patient is still under observation and treatment, and so far there are no signs of recurrence.

Considerable discussion is now going on regarding the beneficial effect of radio-therapy upon pelvic and abdominal malignant neoplasms; some claim that the growth of these tumors is stopped, and many times they disappear altogether.

While on this subject it is well to notice that the X-ray is capable of and does cause absorption, and conservative men have suggested that the use of a powerful ray might produce metastasis of the malignant process; this is a reasonable surmise, and before we advise or use radio-therapy in deep-seated or inoperable malignant disease the case should be thoroughly understood and all evidences carefully weighed; then if the results are grave we can feel assured that our patient has received the best that medical science can offer, even to the last resort, and the stigma of quackery is removed from a method that is of undoubted value.

Very few authoritative reports are obtainable regarding radio-therapy in the treatment of sarcoma, but from recent observations by Coley it appears that the ray has an inhibitory effect upon this form of cancer.

All agree that it lessens, and many times absolutely relieves, pain; this alone would be sufficient to warrant the continuance of this procedure in sarcoma.

I have used the ray in two cases, one of the jaw and the other of the glands of the neck, but neither derived any benefit except relief from pain.—*Brooklyn Medical Journal*.

A SIMPLE AND IMPROVED METHOD OF TAKING AN IMPRESSION WITH PLASTER. By Dr. E. Latzer and Dr. K. Weisl, Brünn.¹

The method is as follows: A suitable impression-tray rather large in size is selected. Its upper surface is treated with vaseline and covered with a fine gauze which has been dipped in water. The gauze should not only cover the upper surface of the tray, but extend two or three centimetres over its border. The texture of the gauze should be very delicate, the fabric known in the shops as Meschlin veiling being the most appropriate. The plaster is mixed in the usual way and placed in the impression-tray. When the plaster touches the gauze which covers the upper side of the tray, a certain amount of plaster passes through the meshes of the gauze and lifts it from immediate contact with the tray. It is thus buried in the mass of plaster used in taking the impression. When the proper amount of plaster has been placed in the tray it is carried into the mouth and the plaster allowed to completely harden. The metal tray is now removed, and the fingers are introduced between the cheek and the jaw, and pressure is exerted so as to loosen the impression. Naturally it is broken in many places, but the pieces do not fall into the mouth. They are held together by the delicate mesh of gauze, and the whole mass can be removed from the mouth together. It is then a simple matter to readjust the fragments in their proper position and put the impression back into the tray. The authors of this method have used it in all sorts of cases, including those with pronounced undercuts, and express the greatest satisfaction with the results.

WILLIAM H. POTTER.

NEW METHOD OF DEVITALIZING THE PULP.—In the December, 1902, number of *L'Odontologia* appears a paper by Jaime D. Losada, on "A New Method for devitalizing the Pulp."

The writer, speaking in the plural, claims priority in the method of pulp devitalization by pressure, referring to an article published in *L'Odontologia* for July, 1899, and a demonstration later in the same year before the Dental Congress in Barcelona.

In refuting the theory that arsenic devitalizes by strangulation, the writer refers to the work of Arkövy and Miller, and states that

¹ Oesterreichisch-Ungarische Vierteljahrsschrift für Zahnheilkunde, Jänner, 1903.

tissue is destroyed by arsenic where strangulation is impossible, and that if this theory were true, filaments of partially extirpated pulps would not remain vital when a portion has been removed after arsenic.

The action of arsenic is progressive, beginning at the point of application and extending gradually. When the pulp is not exposed it penetrates by the dental tubuli and odontoblastic cells. Arsenic acts as a paralyzant, causing hyperæmia, affecting the vasomotor nerves and destroying nutrition.

To relieve pulpitis and prevent its recurrence, immediate extirpation with an anæsthetic and pressure is satisfactory when possible, but the immediate extirpation of the pulp in tortuous canals of multi-rooted teeth is not practicable, and in such cases "arsenical devitalization by pressure" is offered.

Anæsthesia is first obtained with cocaine by pressure, then arsenical fibre, or trioxide of arsenic in solution or powder, is applied with cotton saturated with oil of cloves, followed with raw vulcanite and burnisher, repeating five or six times in ten minutes, thus obtaining the therapeutic action in a short time. The arsenic may be left for a few hours a day to several days. The quantity of arsenic necessary to devitalize a pulp is so infinitely small as not to have been determined, notwithstanding the careful work of Dr. James Truman, of Philadelphia, in this regard.

In twenty cases two were unsatisfactory, one of pulp nodules and an upper molar where the buccal canals were almost obliterated with contents sensitive, while in the palatal root the pulp was insensible.

P. B. McC.

Reports of Society Meetings.

THE NEW YORK INSTITUTE OF STOMATOLOGY.

A MEETING of the Institute was held at the "Chelsea," No. 222 West Twenty-third Street, New York, on Tuesday evening, February 3, 1903, the President, Dr. J. Morgan Howe, in the chair.

The minutes of the last meeting were read and approved.

COMMUNICATIONS ON THEORY AND PRACTICE.

Dr. Gillett presented some paper points, for use in drying pulp-canals, which had recently been put upon the market, at his suggestion, by Johnson & Johnson. The points were put up in convenient form and thoroughly sterilized. He stated his belief that at least half of the difficulties in the past with pulpless teeth were due to the failure of the operators to observe aseptic precautions.

Dr. E. A. Bogue presented a model, taken ten years ago, of an appliance made by Dr. Bing, and which had been already in the mouth ten years when the impression was taken. Dr. Bogue called attention to it as containing the gist of an appliance that Dr. Carmichael is now bringing before the profession.

Dr. Herbert L. Wheeler then read his paper on "Porcelain."

(For Dr. Wheeler's paper, see page 329.)

DISCUSSION.

Dr. W. A. Capon, of Philadelphia, wished to thank the essayist for giving the Institute a paper a little out of the routine on porcelain. Many practical points had been brought out. He objected to the term "faddism" in this connection, and thought that porcelain inlays had reached a point of realism and substantiality, from a conservative stand-point. He could only speak upon the subject from a practical stand-point.

The first subject brought to his attention by the essayist was the relative strength of English and American teeth. The difference was not so great as one would infer from listening to the paper. The English teeth were strong, although they fused at a lower temperature.

Dr. Capon advocated the high-fusing inlay material, although he admitted the superiority of gold as a matrix in certain places. However, he found very little difficulty in getting a matrix with platinum which adapted itself to the walls of the cavity, but it was seldom possible to get an impression of the floor of the cavity also. He did not think the point made of burning out the color amounted to anything, as with a little practice that could be avoided in any case. He had seen the shades burned out of the high-fusing bodies also. There was not so much difference in the shrinkage either. The Jenkins body was a terrific shrinker. The Ash body was also a great shrinker, both high and low. The S. S. White, that fused at

2300°, was almost as great a shrinker. The Close, at 2300°, shrunk less than any. Brewster's shrunk considerably.

Dr. Capon did not know why the term "inlay" came to be applied to these fillings so promiscuously. Until Dr. Head, of Philadelphia, had used the term, he had always spoken of them as porcelain fillings. He thought the terms should be divided, and the word "inlay" be applied to such fillings as occurred in the labial margins. But a corner or an approximal contour should be spoken of as a "porcelain section."

So far as the different porcelain bodies were concerned, he used Close's to-day in connection with Whiteley's and the S. S. White.

Dr. R. T. Moffatt, of Boston, thought that the question of true porcelain was one that was not settled by the essayist's definition. It might be interesting to look at some of the formulæ of porcelain teeth. These formulæ generally were composed of a base that represented the dentine of the natural tooth and an enamel that represented the natural enamel. Artificial enamel was composed mostly of felspar and coloring frit, and the body of silica, felspar, clay, and the coloring. The following formula made a very excellent body: Spar, 12 pennyweights; silica, 8 pennyweights; clay, 20 grammes. The shrinkage of this body (about one-eighth) was not very great, which was very essential in carving teeth.

The essayist spoke of porosity. He did not state that porosity could be due to faulty manipulation. The body was mixed with water or alcohol, as the case might be, and if baked when it is pretty wet, porosity might result, but if put in quite dry and packed hard, the same body would be found to be very dense.

On account of its lack of strength the essayist seems to think the use of porcelain as a filling quite limited. In this there were several things to consider. Porcelain would stand a considerable crushing stress, steadily applied, whereas a sudden impact would fracture it.

Regarding durability, all true porcelain was indestructible in the fluids of the mouth. There was no doubt about that. The essayist stated that glass might be dissolved by the fluids of the mouth after a certain length of time. Dr. Moffatt quite agreed with that. The surface of these inlays turned black, not on account of the absorption of foreign particles, but on account of the presence of oxide of lead, which was the principal base in flint and crystal glass. That might indicate that these modern enamels were not glass but porcelain.

Dr. Capon spoke of burning out colors. In the tooth-carving bodies it was almost impossible to burn out the colors. The principal color in yellow teeth was oxide of titanium, and it took a great degree of heat to even bring that color out. Many times the shade depended upon the size, especially the depth, of the inlay.

The essayist did not give the formula of Dr. Jenkins's body. Dr. Wilson, of Boston, with whom Dr. Moffatt is associated, at the time Dr. Jenkins brought out his material got interested in the subject. Dr. Wilson's idea was that Dr. Jenkins's enamels were practically like gum frit, with the exception of a change of color.

Dr. Capon spoke of burnishing a matrix to the bottom of a cavity. Dr. Moffatt could not see the necessity of always obtaining an exact impression of the bottom of the cavity, provided the walls and margins were perfect. Dr. Capon also stated that in some porcelain fillings it was never possible to tell what the color would be until they were finished. This was one argument in favor of the platinum matrix, as it did not require investing and could be inserted in the cavity from time to time during the process of making to compare the shade. Of the inlay bodies, he considered the S. S. White and the Brewster the best for high fusing and the Jenkins for low fusing. Dr. Moffatt did not consider, in making porcelain fillings, that the question of shrinkage amounted to so much, as the matrix could be refilled at each bake until the required contour was obtained, but it was very important in tooth carving, as the proper allowance for shrinkage had to be made at the beginning.

Dr. E. A. Bogue thought it was not necessary to speak words of commendation of Dr. Wheeler's paper. Dr. Moffatt had alluded to the fact that glass was unfit for fillings on account of the fact that glass contained lead. However, glass could be made without any lead in its composition. As there had been a great deal of allusion to Dr. Jenkins's low-fusing inlay material, Dr. Bogue desired to bring up some rather curious remarks regarding it.

Regarding platinum as a matrix, he thought the trouble was that we did not get it pure. It generally came alloyed with some other metal, as iridium, which made it very much harder. When pure there was very little difference between it and gold.

Dr. Bogue stated that Dr. W. H. Rollins, of Boston, began practice in 1873 or 1874, and that Dr. Rollins had written him that he had begun work on porcelain fillings at once and that by

1879 he was using them with success. In June, 1880, Dr. Rollins read a paper upon this subject before the Boston Society for the Advancement of Oral Science, in which paper he described every method he had thought of for making metal moulds for porcelain fillings. Later he published a paper in the *Archives of Dentistry* for January, 1885, in which paper is a cut of the "revelation bur," which he writes he had sent to White's long before and asked them to make and which the White Company afterwards patented, giving him no credit. This paper also contained formulæ for dental enamels and porcelains required for use in fillings. Dr. Rollins worked long and earnestly to find the cause of discoloration in porcelain fillings, and, according to a translation of Dr. Bruck's paper published in the *Items of Interest* for September, 1902, a new development of porcelain fillings began from the work of Dr. Rollins. Pieces of artificial teeth fused into a platinum impression of the outer borders of the cavity had been ascribed to Dr. Land, of Detroit, as early as 1870, but Dr. Bogue found no record of his making complete inlays to fit the cavity, nor did he find anywhere else in the history of porcelain fillings any such attempt at accuracy as was shown by Dr. Rollins's work.

DR. ROLLINS'S LETTER.

BOSTON, February 2, 1903.

DEAR DR. BOGUE,—I cannot refer you to a paper by Dr. Jenkins in which he claims to have been the first to use gold- or platinum-foil matrices for moulds in which to fuse ceramic material for the production of fillings for teeth, as I am not very familiar with his writings. But I have always supposed he made this claim, as I have never seen a paper in which he credited me with the invention, and if he does not claim this, what is the Jenkins system of filling teeth? It becomes not a system, but a secret material, which he makes and sells to dentists, and thereby he comes into the same class as Ash, Brewster, White, and other manufacturers, who do the same thing. Moreover, he translated a paper by Bruck and had it published in the *Items of Interest* as late as 1892, in which he (Bruck) purports to give a history of ceramic fillings, and to which history the translator makes no corrections. In this historical survey the date of my paper selected as fixing the date of my first contribution is given five years too late; that is, the paper selected is one published two years after my first one; and he fails to state that the paper he puts on record as the first is but an abstract of a paper read before a dental society five years earlier. Moreover, he ignores my later paper, in which I stated that my first method was to take the foil matrix directly from the cavity, and he then goes on to say that the method described in my paper was too com-

plicated to be of use. Secondly, he states in italics that in 1870 Land made the experiment of fusing pieces of artificial teeth in a platinum impression of the outer borders of the cavity. He does not tell where to look for Land's paper. Then he said, "Thus in 1890 Professor Sachs recommended taking the impression with Williams's gold-foil and platinum-foil No. 60 instead of Stent's Composition, and by means of this mould, *obtained direct from the cavity*, secured superior exactness of the margins." As this paper reads, therefore, Dr. Jenkins having made no corrections in it, Dr. Land made impressions of the edges and Sachs made impressions of the cavity in metal foil. Now, long before this paper was published one of Land's friends, whom I might expect to know, claimed that Land was the discoverer of moulded ceramic fillings, and gave the date of the discovery as 1887 (see page 721 of *Items of Interest* for 1899), and he dates the era of porcelain from that time and that invention. Again, on page 727 Dr. Capon gives Dr. Land the credit and fixes the date at 1886. Now, it seems to me that if Land had published a paper on foil matrices in 1870, as stated in Jenkins's translation, these men should have known of it, as they were evidently Land's friends and were trying to prove that the so-called Jenkins method was not invented by him, but by Land. I therefore infer from this that they and others, to whom Dr. Jenkins showed his methods, thought that he was claiming metal-foil matrices as his invention. Every one I have talked with thought so too. If Dr. Jenkins at that time was not claiming to be the originator of a new method of filling, but only appearing as a manufacturer of a filling-material, I cannot see why there should have been any discussion about the originator of the method. The discussion would have been confined to the relative merits of the different ceramic materials made by the different manufacturers, among whom was Dr. Jenkins.

I shall be glad to have you use any facts I have given you in any way which you think is likely to make the history of ceramic filling clear, and if at any time I find that some one before my day invented the foil matrix, which is to all intents and purposes ceramic filling, I shall be very glad to withdraw my claim.

Yours sincerely,

WILLIAM ROLLINS.

Dr. Bogue had written Dr. Rollins quite a long letter regarding the work of Dr. Herbst, a German. Dr. Herbst spoke no English, and had worked at glass fillings with platinum and gold matrices for a long time. Through that work he introduced the matrix system of fillings into Germany.

Dr. N. S. Jenkins, who has lived in Germany for thirty or forty years, and who had probably never seen nor heard of the *Boston Medical and Surgical Journal*, saw some good in the system introduced into Germany by Herbst and undertook to improve upon it. In that effort he had spent most of his time in the past four or five

years, denying himself the lesser pleasures of social intercourse and enlisting in his work, through his royal friend and patron, the managers and workers of the porcelain factory at Dresden. He had expended somewhere near ten thousand dollars in the experiments that are still going on. He has travelled largely in America, France, Germany, Sweden, and Denmark to introduce this system and to present it clinically, gratuitously teaching the technique to any one willing to learn. This coming spring he was going to Spain to attend the meeting of the International Medical Congress, where he is slated for a paper on porcelain fillings. Dr. Bogue mentioned all this because he had spent a week with Dr. Jenkins last summer and had seen the serious work that he was doing.

Dr. Jenkins claims that by baking his porcelain three times lightly and a fourth time thoroughly, he succeeds in getting a substance so dense and hard that it will scratch glass; so strong that it is practically impossible to break it when it is in position; so perfectly adapted, if the matrix is perfect, that nothing further could be desired, and, finally, if the heat be regulated as Dr. Jenkins now claimed to be able to do, the color would be absolutely exact also. The way Dr. Jenkins regulated his heat was to use a gas blow-pipe with a shut-off attachment that had been tested previously according to the gas pressure until the proper degree of heat had been ascertained. When the first three bakes were made the heat was brought barely up to the fusing-point and then stopped, while at the last baking the heat was brought to the fusing-point and kept there, not increased, the same degree of heat being maintained, until complete fusion took place. This, it was claimed by Dr. Jenkins, made a homogeneous mass and avoided bubbling, which had been such an obstacle to perfection and which the essayist of the evening referred to as a chemical change which had taken place at high temperatures only. Dr. Bogue thought that in this particular the essayist agreed theoretically with Dr. Jenkins's conclusions, however much he might differ from him on general grounds.

One of the main grounds for failure in the use of porcelain fillings was a ground that existed for the failure of all fillings, but was not generally recognized,—viz., the extension of disintegration to a point considerably beyond the border of the cavity, after it is supposed to be fully excavated. Dr. Wedelstaedt seemed to have recognized the condition, but he put it differently and called it "extension for prevention." Only last week Dr. Bogue had occa-

sion to insert two porcelain fillings at the cervical margin, labial side, of two upper cuspids. This was a position of all others, the upper incisors excepted, where we should expect the surfaces to be free from deleterious deposits; yet with the rubber dam in place for an hour, so that the surfaces became well dried, the difference in color between the lower margins of both cavities and the bulk of the teeth was perceptible for at least one-sixteenth of an inch from the margins of the cavities. It would have been manifestly improper to have extended these cavities in order to prevent decay, but he had shown the traces of the destroyer to his patient and had encouraged her to continue her cleanly habits, using lime water as a detergent as well as an antacid. If traces of disintegration could be discovered in such localities, what might be expected in cases of approximal decay far back in the mouth, where often the light could not be made to penetrate and where direct vision was impossible. Another objection that occurred to Dr. Bogue was where the inlays, after the lapse of years, struck against occluding surfaces.

Dr. C. F. Allan said that while the essayist's paper presented the subject in a light different from anything before written, and had brought out many details of the greatest interest in relation to physical structure and composition, he was afraid that when we come to the practical questions as to when and where to use porcelain, we would be as much in the dark as ever.

Dr. Allan thought that the range for the use of this material was very much greater than had even been suggested by any of the speakers this evening. The statement that its use should be bounded solely by considerations of æsthetics relegates the material to a minor position such as is not at all warranted by its merits.

Just to make one exception to his narrow construction of the use of porcelain, he would like to call attention to its great value for filling and restoration of contour in cases of badly broken-down bicuspid and molar teeth, especially of the upper jaw.

When we think of the serious undertaking it is to fill such teeth with gold, contouring and finishing to that degree of perfection absolutely necessary for good results, then to know that we can do all that contouring in the furnace, it certainly does not seem wise or reasonable to limit the use of porcelain in this narrow way. Such cases are thoroughly practical, have, as a rule, no difficulties that are at all insuperable, and compare favorably for permanence

with any other way. Comfort, permanence, and æsthetics are all subserved.

As affecting the great advantages of gold in making matrices, it is being continually stated that platinum has a great advantage in that it can be returned to the cavity after the first and subsequent bakings to be burnished to a perfect fit. To the users of Jenkins bodies this is not at all a merit, as he expects to make a perfect matrix and from a perfect matrix will have perfect work.

Until more scientific, careful, and detailed experiments are made as to the comparative merits of high- and low-fusing bodies it is useless to criticise, but the users of Jenkins bodies have so far no reason to doubt the great merits of this material.

Dr. Gillett complimented the essayist. He had presented to the profession a line of thought never before worked out. Dr. Gillett thought it time we stopped discussing the advantages of one form of porcelain over another and recognized the fact that they were both adapted for certain cases. In selected places he was able to use Dr. Jenkins's material more rapidly and just as satisfactorily as he could the high-fusing body. Personally he was no more interested in the discussion as to which was the better, the high- or the low-fusing body, than he was in the discussion as to the relative superiority of gold and amalgam. Although they were not used in the same place, they both had their uses. He was satisfied that the Jenkins material was sufficiently durable when properly manipulated, and found it especially adapted for labial and approximal cavities in incisors and cuspids. The essayist doubted if a filling could be made with a concavity from the Jenkins material. If he would try it he would find that it could be done. Dr. Gillett thought that the shadow problem was more troublesome in the low- than in the high-fusing material that contained more of the insoluble ingredients.

Dr. Wheeler, in closing the discussion, said that, regarding shrinkage, if there were a large amount of kaolin present in the formula the shrinkage would be great, and that the opposite would be true if there were a large amount of silica.

In regard to glass, there was present in flint glass about thirty-three per cent. oxide of lead. However, there were several kinds that did not contain oxide of lead at all. It did not necessarily form a base in the making of glass.

What Dr. Moffatt had said about bubbling was true. Moisture

did have a great deal to do with it. He had stated in his paper that chemical change contributed to bubbling. He did not claim that it was the sole cause. Regarding insolubility, he did not dispute the claim that it was possible to produce a low-fusing body that would be practically insoluble. That remained to be seen.

In regard to the oxide of titanium, he learned from his sources of information that it did burn away as a coloring-matter.

As regards Dr. Rollins being the first to use the metal matrix for porcelain fillings, Dr. Wheeler had seen a recorded description of the process by him as early as 1885, but he had been unable to find any recorded statement of Dr. Land's that would give him the credit for having first brought it before the profession.

Regarding the fusing-points, these were not from his own experiments, but were given to him by Mr. Hammond. He doubted the accuracy of some of them.

Regarding the question of gold *versus* platinum as a matrix, he had seen very fine porcelain fillings made in both forms of matrix. He thought it was a question of workmanship. He did not think one could take either Dr. Capon or Dr. Gillett as a fair example of what the average individual would do with these materials.

Upon motion, a vote of thanks was extended to both Dr. Capon and Dr. Moffatt for their kindness in coming on from distant cities to discuss the paper.

Dr. G. S. Allan presented to the Institute a request from Dr. Louis Jack that he have the privilege of soliciting from active or associate members of the Institute original papers and contributions. Dr. Allan stated that, as the request seemed so reasonable, he would move that it be granted. Motion carried.

Adjourned.

FRED. L. BOGUE, M.D., D.D.S.,
Editor The New York Institute of Stomatology.

INTERNATIONAL DENTAL FEDERATION AND INTERNATIONAL COMMISSION OF EDUCATION: MEETING HELD IN STOCKHOLM, SWEDEN, AUGUST, 1902.

(Continued from page 234.)

The President.—The general discussion this afternoon embraces three topics prepared last year for our consideration. The first is, "What are the preliminary studies to be required of students before beginning their professional education?" I will ask Professor Hesse, of Leipzig, to open the discussion.

Professor Hesse (speaking in German).—All I have to say on this question is printed in the first of the three fasciculi issued by the Federation, and I expect that every one will have read them, and anything I might say would be simply repeating what is already printed; therefore I prefer to say nothing now.

The following is an extract from Professor Hesse's report:

REPORT TO THE INTERNATIONAL COMMISSION OF EDUCATION, BY PROFESSOR DR. HESSE, OF LEIPZIG, GERMANY.

Following the decision of the International Commission of Education, I have the honor of submitting the following answers to the questions proposed by the Commission:

First: "What should be the preliminary requirements for admission into dental schools?"

Answer: It should be similar to that required of medical students.

Second: "What should be the length of time devoted to the study of dentistry, and the arrangement of the curriculum?"

Answer: The duration of the course should be of three years at least. The curriculum should comprise—(a) Natural science,—namely, physics and inorganic chemistry; (b) Medical sciences,—viz., anatomy, physiology, general pathology, bacteriology, embryology, general surgery, and materia medica; (c) The science and art of dentistry. In these studies a prominent place should be given to practical dental work. During all the time devoted to the various divisions of the course the dental student should be required to devote at least three hours daily to practical operative and technical studies. This course would have for the student the same value as the attendance at hospitals has for the medical student.

Third: "What part of the subjects that are taught in medical schools should be pursued by the dental student?"

Answer: The dental student should follow a general course in physics and chemistry, and should also follow a course in general anatomy, general pathology, embryology, and bacteriology. We recommend that a special

course in general anatomy, physiology, general pathology, and *materia medica* should be given to dental students, as we deem that these topics embrace many features which are of no value to the dentist, and which cannot be acquired in the lapse of time at the disposal of the dental student.

Dr. Queudot, who spoke in French, was of the opinion that it is impossible to have a good dentist unless he is an educated man. The preliminary instruction is especially important, and in the professional education could be included such subjects as bacteriology and others that are included in a medical curriculum but are not really medical. Only the best is good enough for dentists. After that the student may take up his work in the dental school, and take it up with a light heart, because he has been well trained and has a stiff leg and a strong arm. What was difficult becomes easy because of the good training he has had before.

Dr. B. Holly Smith.—My own impression is that the work we have to do this afternoon is the discussion of Dr. Brophy's address and Dr. Barrett's paper, and I will come directly to that. The education of the dentist must be separated from that of the medical man. I ask you to consent to the discussion proceeding on those lines, because however broadly the foundation of medical education is laid, however widely and definitely the plans are made for the education of the student who attempts to practise dentistry, medical instruction is lost time. Start your student to study anatomy, physiology, bacteriology, therapeutics, and *materia medica* in the dental school, but do not send him to men who are teaching general anatomy, general pathology, and general physiology. Put him absolutely under the control of competent, capable, cultured people who know his specialty, and who will train him for it. I say that because life is short. We begin too late to do our life's work. Thirty-one years! You cannot start practising so late as that. How much of life has gone in those thirty-one years! If you propose to have a medical education, a dental education, and a degree from a literary institution, you are thirty-one years old when you start to practise dentistry, and we cannot have that. It is extremely embarrassing to me that I cannot understand the question.

Dr. Aguilar.—You have understood it.

Dr. Harlan.—Perfectly.

Dr. Cunningham.—Not at all: I protest! Did you say, Dr. Queudot, that a dentist must have a medical education?

Dr. Queudot.—No.

Dr. B. Holly Smith.—I want to say with regard to the very paper of my dear friend and beloved *confrère*, Dr. Brophy, that I admire many of the elucidations of what we consider in America some intricate problems in education. I admire it because as a teacher of long experience he has determined a course. In the city of Stockholm I have admired as much as anything else the beauty of the water, the lovely architecture, and the lovely display of nature's gifts, but I have admired one thing above all, the quickness and promptness of the driver, the man who knows the way, the man who goes quickly, who steers clear of disaster. My dear friend Dr. Brophy has opened the way for us with regard to education, and that is the way we must follow. A university can never teach dentistry and medicine together. If we establish a course in dentistry and have professors of medicine, professors of physiology, and professors of chemistry, and the student studies dental chemistry, dental physiology, and dental anatomy from his own stand-point, then it is possible, but it is not possible when you say that a dental student may slink in through the door and may take what he can get from a medical man by the side of the medical student, and then when the time comes for examination he is told, "Oh, you are only a dental student!" We cannot have that! I do not say that a man, because he is a medical man, could not prepare himself to teach these students, but you cannot have medicine and dentistry taught together. I am opposed to it. Dr. Barrett made a remark that Dr. Harris had endeavored to establish a dental course, and said that that was an incident which was unimportant.

Dr. Barrett.—I did not say such a thing; I said that it was merely an incident that had occurred in America, but it might have occurred anywhere else. It had nothing to do with the merits of the case that it occurred in America first.

Dr. B. Holly Smith.—I stand here as the representative of the Baltimore College of Dental Surgery, the first and oldest college in the world, and I say that dentistry must feel grateful that Chapin A. Harris and Horace Hayden established a dental school. Why do I say so? I feel the absolute importance to be attached to the beginning of dentistry, and I think there is no excuse whatever for passing that by as an unimportant question. Dentistry began in Baltimore, and dentistry will continue through-

out the world. There never will be a time when dentistry will lose its identity as an individual and distinct calling.

The President.—It is desirable, if we can, to limit our discussion as far as possible to the three general questions. I do not think it is expedient to pursue further the remarks on the papers that have been presented. We ought to dispose this afternoon of the discussion of the papers that have been presented, and when we meet together again we can then take up the three general questions.

Dr. George Cunningham.—While I do not desire to make any speech at all or go into the merits of the question, I want to make you acquainted with the fact that, owing to work which I have to do, I cannot be present, and I should like to take this opportunity of telling you that a great reform has taken place in England with regard to preliminary education. At the present moment they are discussing the Education Bill in Parliament, and that bill will make a great deal of difference to the future history of England. There is a great reform which has taken place, and the nation has not yet learned it. The new University of London has decided that Latin will no longer be compulsory on the medical, dental, or other professional student, and you will see from that that a great step has been taken.

Dr. Barrett.—I do not want to be misunderstood. That Chapin A. Harris was an American was merely an accident, and has nothing to do with the question. He might have been an Englishman, a Frenchman, a German, or a Spaniard, and it would not have changed matters or made any difference. I said it was merely an incident that he was an American. I am an American, but my sympathies do not stop with America by any means. We have good American schools, but they have good schools elsewhere. In America I think in some respects we are superior, but there are schools in other countries which in some respects are superior to ours. The question is, May, with propriety, dentistry be taught in the medical schools? It depends on the dentistry. With us the mechanical is the dentistry, and cannot be taught in a medical school. In many countries it is medical teaching, and should be taught in a medical school. My point is, Is there not a common ground on which we can meet,—English, French, German, Swedish, American, under the different systems,—some common system, so that when an American shall desire to enter a German school he

may receive the credit for that which he has accomplished, and a German in an American school may also receive the credit for his work? I do not think it would be wise to permit a German to practise in America without any restraint, or an American to practise in Germany. There must be the national regulations to be observed, and hence if a German comes to America he should take a term in an American school and become acquainted with our methods. If an American goes to Germany it may be best that he should take a term in a German school. Is there not some middle ground which would be common to all of us on which we could all meet and shake hands,—German, French, English, and American together?

The discussion was continued by Professor Franck and Dr. Guerini in German and French respectively.

Dr. Aguilar, Madrid.—I believe that we are here now for the discussion of three points on which I think resolutions should be taken. Therefore I shall move to present certain resolutions.

The President.—Let me suggest that inasmuch as the three questions have not yet been considered, these resolutions are not yet appropriate.

Dr. Aguilar.—What are we discussing?

The President.—The three questions will be discussed.

Dr. Aguilar.—We are discussing them now.

The President.—No; we are discussing the address of the President and the paper of Dr. Barrett.

Dr. Aguilar.—Then I will say nothing.

Dr. Guilford.—Will this subject be continued on Monday?

The President.—This is a subject to which we might devote some time on Monday. It is absolutely necessary that the three subjects before us should be considered. They were proposed last year and are before the Commission for discussion, for further consideration, and for adoption. These questions may, however, be discussed if the gentlemen will meet promptly at nine o'clock. I would suggest that instead of coming to this Institution we convene in the Grand Hotel where we are stopping, and thereby save much time.

Dr. Guilford.—I would suggest that we confine ourselves to the discussion of the questions themselves. We are not here to discuss the beginnings or history of dentistry or anything else.

The President.—This afternoon the question was the address,

and after that subject has been disposed of comes the consideration of the three questions, and when we come to the consideration of the three questions other topics will not be discussed.

Professor Hesse.—I should not like to leave this room without saying one word of thanks to Professor Brophy, not only for presiding so well, but for his excellent paper, and especially for having it printed in German and in French. That is a great advantage, for our greatest barrier of separation is in not understanding each other's language.

The President.—I thank Professor Hesse for what he has said, and I would like at the same time to say that the translation of my address is not accurate. Some errors have been made that may slightly change its meaning, and I would therefore like to have those who have read the address in French and German withhold their judgment upon it until they see it printed in an accurate translation. Some words have been omitted here and there. I think it is eminently fitting that whoever reads an address in English should have it printed in two or three languages. It is a simple thing and it helps so much in coming to an understanding of what the author intends to convey.

Adjourned to meet at nine A.M. Monday, August 18, at the Grand Hotel.

INTERNATIONAL COMMISSION OF EDUCATION.

Monday, August 18, 1902.

Dr. Queudot, Paris, presented a report on "Dental Education" on behalf of the École Odontotechnique, of Paris. In substance he said that dental surgery is a branch of medicine, and that during the preliminary education of the future dental candidate nothing should be neglected that could in any way develop the literary, scientific, and artistic sense of the student. Like the physician, the dentist should possess a good basal knowledge of literature and science, as these are important factors in carrying out the duties of his calling.

Dental education, he claimed, comprises two distinct parts,—namely, the scientific group and the technical group of studies. The technical group is the application of the knowledge acquired from the scientific group. The first duty of the dental student should be to acquire a sufficient degree of knowledge of anatomy,

histology, pathology, bacteriology, and of all other branches which, strictly speaking, cannot be called medicine, but which are, however, the basis of medicine and of all its specialties. After acquiring the necessary preparatory education referred to, and only then, should the student be permitted to enter upon the study of the dental branches, in our clinics as well as in the several dental schools.

Dr. Vincenzo Guerini, the official delegate of the government of Italy, then presented the report which here follows:

REPORT TO THE INTERNATIONAL COMMISSION OF EDUCATION BY DR. VINCENZO GUERINI, ITALY.

GENTLEMEN,—I wish to bring before your consideration several general ideas regarding the subject of dental education, but before doing so I must refer to a special feature of dental education in the country which I represent, as this is in strict accord with the ideas which I will now discuss. For about twelve years there has been a law in Italy which requires that all dentists must be holders of the degree of doctor of medicine before they can be allowed to practise their profession. This legislative measure presents great inconveniences, as I have on several occasions endeavored to demonstrate. I have pointed out the necessity that odontology should be taught as a separate and autonomous science, and not as a simple branch of general medicine. I found myself in the necessity of discussing this topic with the *médecins-dentistes*, and as soon as this was taken up I found that in order to defeat my adversaries the first thing I had to do was to recognize whatever truth could be found in their arguments, this being in my estimation the only way of clearly demonstrating the fallacy of their conclusions.

In the arguments advanced by the *médecins-dentistes* we find some truthful assertions,—viz.: That in order to practise dentistry upon a scientific basis it is necessary that the practitioner should possess a rather extensive medical education. As dentists are called upon to treat living organs, it is indispensable that they should thoroughly understand all the disturbances that may affect these organs, all the organic or extra-organic causes which may bring them about, and all the possible relations of dental and peridental diseases to the rest of the organism. If this be admitted, it follows as a rational consequence that the medical education of dentists must not be too limited nor too superficial, as in order to be in a position to understand thoroughly everything concerning dental diseases and their relations to morbid conditions of the organism it is necessary to possess a large share of medical science. I am therefore convinced that dental schools will have to extend gradually the scope of medical teaching, as the extent of the medical branches taught in dental schools at present is certainly insufficient. As an example, I will quote from the report of Dr. Charles Godon, of Paris, in his work, "Evolution de l'Art Dentaire."

From this report we gather that in the École Dentaire of Paris about

four-fifths of the total time is devoted to technical teaching and only one-fifth to the scientific and medical subjects, to the importance of which we are now referring. If we consider that the dental course covers three years,—that is, about thirty-six months,—it is easy to see that by this arrangement the entire medical education required from the dental student could be given him in seven months, including in this time vacations and holidays. Now, you know that medical students who devote from five to six years to the study of this science leave the school after this time with a very incomplete knowledge of medicine. The time devoted to the teaching of medical branches in dental schools is very limited, and therefore the student can acquire only a very limited and superficial knowledge, which will not help him to understand the pathology of the dental and peridental organs and the complex relations which exist between these parts and the rest of the organism from the points of view of the etiology, pathology, and therapeutics of the disorders of which these organs may be the seat.

It is true that it has been decided to increase the course to four years, but, as far as I am aware, this fourth year will be devoted entirely to technical teaching; therefore even with a four years' course the medical education of dentists will remain just as imperfect and insufficient as it is at present. I believe in the necessity of extending the course to a five years' one, and during this period the dental student should be taught both general medicine and dentistry. I believe, further, that the curriculum should be arranged in such a way that the student might be able to devote at least four hours a day to medical subjects and the remaining five or six to strictly technical subjects. Five or six hours a day during five years should be sufficient to make skilful dentists, and, on the other hand, four hours a day devoted to medical subjects during five years should create dentists possessing a reasonable amount of medical education. They would have an amount of medical knowledge at least sufficient for the practice of their profession upon a scientific basis.

Regarding the question as to whether medical subjects should be taught in the dental schools or in the medical schools, I will positively answer that the medical subjects to be taught to dentists should be given by teachers making a specialty of these subjects in their bearing on dentistry. The necessity that the medical education of dentists should be a special one is certainly evident. Let us take, as an example, anatomy. On the bucco-facial region the anatomical training of the dentist should be more complete than that of the physician, just as, on the other hand, the anatomy of other regions could be suppressed from the curriculum or given in a more superficial way without at all injuring the dentist's education. For similar reasons, the teaching of other branches of the medical programme in dental schools should differ from the teaching of the same branches in the medical school.

To summarize, we will say that for dental students the course should be altogether a special one, and its purpose should be to impart to the student without the slightest loss of time the greatest amount of medical knowledge that will be useful to him in the practice of his profession.

I also wish to call your attention to the question of *preliminary educa-*

tion. Unfortunately, this question cannot be treated in a general way, because of the great differences presented by the organization of primary or elementary education, especially of the secondary education, in different countries; notwithstanding this difference in organization, however, I believe that the total duration of the studies that dental students should take up before entering institutions of higher education should not vary a great deal in the different countries. This involves, say, about twelve years. I believe that the preliminary education of dental students should be the same as that required from the physician, the lawyer, the engineer, etc. With a preliminary education of this sort lasting twelve years it is possible to undertake the study of dentistry after having acquired a good literary and scientific education, comprising among other things the study of ancient and modern history, physics, chemistry, natural history, mathematics, languages, etc. All these studies are apt to develop the intelligence of the student, and will serve the purpose of excellent preparation for the study of dentistry, permitting the dental student to assimilate easily the knowledge which will be imparted to him in the professional schools. The better educated the dentist is, the more will he be respected. It is essential that he should cease to be inferior to the physician from lack of either general culture or scientific requirements. He should rise to the same level as the physician, and should be prepared to intelligently discuss with him any scientific subject. He should be able to write correctly and easily, in order to be in a position to increase the literature of the profession by contributing works on dental topics. It would be a shame for the profession if the greatest part of its literature were written by physicians and not by dentists, as has already been asserted.

For the foregoing reasons I am led to express the wish that dental candidates should have a more complete preliminary education, and that in the curricula of dental schools more time should be devoted to the study of medical subjects.

Dr. Förberg then read the following report:

DENTAL LEGISLATION IN SWEDEN.

The laws regulating dental practice in Sweden are very old, and as they have been considerably changed since the establishment of a dental institute, I deem it best to give only such points as will serve to make the subject clear. Since the foundation of this institute all dental instruction is given there, and the studies are obligatory.

Every one wishing to matriculate at this dental institute must present himself before the dean and produce his certificate of birth, testimonials as to his moral character, etc., from his clergyman, and a certificate from a high school that he has passed his final examination, which qualifies him to enter a university (maturity examination). This certificate must show that he obtained good marks in mathematics and physics, otherwise he must pass special examinations on these subjects.

There is only one dental institution in Sweden. It is the Dental De-

partment of the Caroline Medico-Chirurgical Institute of Stockholm. It is a State institution. The course comprises three years, of about eight months, each year divided into two terms. During the first year the student attends the lectures in the medical department on medico-scientific subjects, in courses specially designed for dental students. At the end of the year the student is examined in these subjects. This is called the "dental candidate examination," and if passed entitles him to matriculation in the Dental Institute. Here he receives practical dental instruction for two years.

The final examination before becoming a legal dentist is given by the professors of the dental department and the professor in general surgery of the medical faculty as examiners, before an examining board consisting of the inspector (dean) and two practising dentists (chosen yearly) as censors. When the candidate has passed his examinations at the dental department he receives a certificate, and is referred to the Royal Medical Board, from which he receives his diploma as authorized dentist (tandläkare). The Royal Medical Board (Kongliga Medicinal Styrelsen) is therefore the licensing board.

Women have the same rights and privileges as men in regard to the study and practice of dentistry. Physicians have the right to practise dentistry without being obliged to pass any examination.

Dentists are allowed to prescribe drugs, and even poisons, for external use, but the administration of a general anæsthetic must take place in the presence of a physician.

There are about three hundred dentists in Sweden, of whom more than one-third are located in Stockholm. There are three Swedish dental journals,—*Nordisk Tandläkare-Tidskrift* and *Odontologisk Tidskrift*, of Stockholm; and *Reflector*, of Gothenburg. The Swedish dental societies are Svenska Tandläkare-Sällskapet, Göteborgs Tandläkare-Sällskapet, Skaraborgs Tandläkare-Sällskapet, Malmö Tandläkare-Sällskapet, and Odontologiska Sällskapet. The members of the last four societies are at the same time members of the Svenska Tandläkare-Sällskapet and of the Scandinavian Dental Association, which is common for the three countries.

Dr. Jos. Arkövy presented a report embodying his views on the subject of dental education with especial reference to the three questions proposed for discussion by the International Commission of Education. This report is here omitted, as his views are fully expressed in his report published in the Proceedings of the International Dental Federation and International Commission of Education for 1901.

The following is the report submitted to the International Commission of Education by the Canadian representative, Dr. Charles E. Pearson:

REPORT ON THE THREE QUESTIONS PROPOSED BY THE INTERNATIONAL COMMISSION OF EDUCATION OF THE INTERNATIONAL DENTAL FEDERATION.

Regarding the three questions proposed by the International Commission of Education, your representative considers it advisable to quote from a very able article which appeared in the *Journal of the British Dental Association* for April and May, 1901. The writer of the article, A. E. Webster, D.D.S., M.D., professor of orthodontia and demonstrator in operative dentistry in the Royal College of Dental Surgeons, is editor of the *Dominion Dental Journal* and is a recognized authority on educational matters. The article referred to is detailed and complete, giving the full requirements, subject by subject, for matriculation to the school of the Royal College of Dental Surgeons, with examination papers, and a detailed statement of the course of studies in dentistry, also giving examination papers.

The quotations from this paper of Professor Webster's furnish answers to the three questions asked by the International Commission of Education.

Question 1: "What are the preliminary studies to be required of students before beginning their professional education?"

"The by-laws of the board of directors provide that every person who wishes to practise dentistry in Ontario shall matriculate in the Royal College of Dental Surgeons of Ontario. The board does not hold a matriculation examination, but accepts an official certificate of matriculation in arts in any Canadian or other recognized university, or of having passed the Ontario Educational Departmental junior or senior high school leaving examinations. These examinations are conducted by the Education Department, and are held simultaneously at every high school in the province once each year. All candidates write on the same examination papers. The answers are read and graded in the city of Toronto by teachers who gather there for that purpose. The junior leaving examination, which is the lowest standard of matriculation that the Royal College of Dental Surgeons will accept, embraces the following subjects and standards:

"Part I., junior leaving standing.—The subjects prescribed are reading, drawing, geography, botany (or agriculture), writing, with book-keeping and commercial transactions, English grammar, English literature, arithmetic and mensuration, English composition and history. *Part II.*—The subjects prescribed are English grammar and rhetoric, English composition, English literature, ancient history, arithmetic and mensuration, algebra, geometry, physics, and Latin, and one of the following groups: (a) French and Greek; (b) German and Greek; (c) French, German, and chemistry; (d) French, physics, and chemistry; (e) German and chemistry; (f) Botany, physics, and chemistry.

"The arts matriculation of the University of Toronto is based upon and is similar to that of the University of London, England."

Question 2: "Of what are dental studies to consist, how long ought they to last, and what should be the order of the programme?"

The course has been three terms of seven months' duration, but after

1902 it will be a four years' course of the same duration. The three years' course embraces the following:

First year, or freshman year: Anatomy (general). Fifty lectures. Minute anatomy of the bones and muscles of the head and neck.

Chemistry. Sixty lectures, including chemical physics, chemical nomenclature, symbols, combining weights and quantivalence and physical properties of the principal elements, and the preparation and chemical properties of oxygen, hydrogen, nitrogen, chlorine, sulphur, and potassium.

Histology. Thirty lectures, including general histology and minute histology of the human teeth.

Bacteriology. Twenty lectures and demonstrations.

Comparative dental anatomy. Ten lectures.

Operative technique. Fifteen lectures, embracing topographical anatomy of the human teeth; dental caries; discussion of filling-materials; cavity classification, root-canal medication and filling. Students must attend the technique laboratory eight hours each week during the session. In this course the student is expected to study the structure of the teeth and the anatomy of the surrounding parts. He must carve at least sixteen teeth from celluloid, making minute drawings of both longitudinal and cross sections of the teeth; practise root filling and medication; study and practise the use of instruments; form cavities in the carved celluloid teeth and fill them.

Prosthetic technique. Fifteen lectures, embracing the extraction of teeth, impressions, base-plates for artificial dentures, air-chambers, clasps, casts and dies, articulation of full dentures, manufacture of artificial teeth-crowns. Students must attend the prosthetic laboratory two hours each day of the session, and construct the following pieces: Partial upper denture in vulcanite; partial lower, with vulcanite clasps; partial upper, with metal clasps; repair vulcanite case; full upper and lower plain teeth, upper vulcanite, pink gum, air-chamber, lower cast metal; full upper and lower gum teeth, upper swaged aluminum, black vulcanite attachment, lower cast-metal base with pink gum; partial lower vulcanite with swaged metal stringer; partial upper swaged metal base; four gum teeth with rim and clasps, swaged upper metal base, wire edge, wire loops, air-chamber; Richmond crown; all-metal bicuspid crown; all-metal molar crown; metal bicuspid crown with porcelain face; Logan crown ground and set on a suitable root. Each case must be made to fit suitable models provided in the technique laboratory, and have a ticket attached to it when handed in for examination, to show that the demonstrator in charge has directed and seen the work in progress.

Metallurgy. Fifteen lectures, including the properties of metals, alloys, amalgams, lead, antimony, tin, bismuth, zinc, cadmium, copper, iron, aluminum, mercury, silver, iridium, palladium, platinum, gold.

Second year, or junior year: Operative dentistry. Fifty lectures on development of the teeth, clinical history and pathology of caries, pulpitis, pericementitis, and alveolar abscess; the composition and preparation of materials for filling teeth. The insertion of at least forty fillings in the teeth of patients in the infirmary.

Prosthetic dentistry. Fifty lectures. Extraction of teeth; composition and preparation of materials for taking impressions and for bases for artificial dentures; preparation of casts and dies for metal work; composition and manufacture of artificial teeth; the mechanical and æsthetic construction of dentures on plastic bases; the construction and insertion of at least five artificial dentures for patients in the infirmary.

Crown- and bridge-work. Sixteen lectures. The construction of two crowns and three bridges of three teeth each, on models prescribed by the professor in the department.

Orthodontia. Twelve lectures. A study of the materials used and their application; the construction and adaptation of one or more appliances to a suitable model.

Porcelain work. Five lectures.

Anatomy. Fifty lectures. Minute anatomy of the head and neck and general anatomy. Dissecting the head and neck, and at least one other part, at the medical department of the Provincial University.

Chemistry. Fifty lectures. The whole subject. Attendance in the chemical laboratory four hours a week throughout the session.

Physiology. Fifty-five lectures. Circulation, respiration, and digestion.

Medicine and surgery. Fifty lectures. Inflammation, healing and reparative processes, treatment of wounds, luxation and dislocation of the inferior maxilla.

Materia medica. Fifteen lectures. Weights and measures, source of preparation and mode of administration of, and medical and dental use of, one hundred drugs. Prescription-writing.

Third year, or senior year: Operative dentistry. Fifty lectures, embracing the whole subject and including dental pathology. Each student must insert for patients in the infirmary at least forty fillings, twenty-five of which must be gold; successfully devitalize and remove the pulps of five teeth and fill the root-canals; insert porcelain fillings as directed by demonstrators.

Prosthetic dentistry. Fifty lectures, covering the whole subject. Each student must construct and insert for patients in the infirmary at least five whole or partial dentures, and also make a gum-section denture on a prescribed model.

Crown- and bridge-work. The student must construct and insert at least three crowns, or a bridge of not less than three teeth for patients in the infirmary.

Orthodontia. Ten lectures, covering the whole subject. Each student must treat at least one case in the infirmary.

Dental therapeutics. Fifteen lectures, covering the whole subject.

Physiology. Fifty lectures, covering the general subject.

Medicine, surgery, and general pathology. Fifty lectures. Students must treat such cases as come to the infirmary, and attend once a week the clinics of the Victoria Hospital.

Dental metallurgy. Twenty-five hours in the laboratory.

Bacteriology. Twenty-five hours in the laboratory.

No candidate will be admitted to final examinations who does not present certificates to show that he has inserted for patients at least one hundred fillings and at least eight whole or partial dentures. Fifty of the fillings and six of the dentures may be inserted in the preceptor's office.

Candidates must obtain at least sixty per cent. of the marks allotted on all examinations in order to pass. All practical work done through the whole course is examined and graded, and is counted a part of the examination as much as the written papers.

Candidates of good moral character, twenty-one years of age, who have complied with the regulations and have satisfactorily passed all examinations, both written and practical, are awarded a certificate of license to practise dentistry in Ontario, and the title of L.D.S. (Licentiate of Dental Surgery).

Question 3: "What branches of the studies taught in medical schools must the student of dentistry follow?"

This question is answered best by studying what has been adopted by our school as stated in answer to Question 2.

PROPOSED CURRICULUM.

In conclusion, a proposed curriculum for the four years' course of the Royal College of Dental Surgeons of Ontario is appended. This curriculum for the course of four sessions is proposed to come in force October 1, 1903:

Add to present curriculum—Physics, physical diagnosis, and anæsthesia; the practice of medicine, electro-therapeutics, institutes of dentistry to include history of dentistry, dental ethics, management of practice, advertising, etc.; laboratory, practical pathology; attendance at General Hospital.

Re-arrange the work—

First Year. Lectures: Histology, bacteriology, comparative dental anatomy, physics, materia medica, operative and prosthetic technics; commence anatomy. Laboratories: Histology, operative and prosthetic technics.

Second Year. Lectures: Therapeutics, orthodontia, crown- and bridge-work, complete anatomy, commence dental pathology, operative and prosthetic dentistry, commence chemistry. Laboratories: Practical anatomy, operative and prosthetic technics, crown- and bridge-work technic, orthodontia technic.

Third Year. Lectures: Metallurgy, electro-therapeutics, complete operative and prosthetic dentistry and dental pathology, complete chemistry, commence physiology, commence medicine and surgery, and general pathology. Laboratories: Infirmary, operative, prosthetic, orthodontia, crown- and bridge-work, chemistry, bacteriology, pathology, porcelain technic.

Fourth Year. Lectures: Complete physiology, complete medicine and surgery and general pathology, jurisprudence, physical diagnosis and anæsthesia, practice of medicine, institutes of dentistry. Laboratories: Infirmary, operative, prosthetic, orthodontia, crown- and bridge-work, porce-

lain work, chemical metallurgy, clinical medicine and surgery at the General Hospital.

Dr. Rudolf Weiser presented the following report:

REPORT ON THE THREE QUESTIONS PROPOSED BY THE INTERNATIONAL COMMISSION OF EDUCATION.

The first of the three questions proposed by the International Dental Federation reads as follows:

"(1) What are the preliminary studies to be required of students before beginning their professional education?"

There can be little doubt that all Austrian dentists are of the opinion that from one who intends to devote himself to dentistry the same preparatory education should be demanded as from one who will go to the university or to a polytechnic school, or who wishes to perform his military service as a one-year volunteer.

For my own part, I cannot but feel that the curriculum at most grammar schools and higher schools in most European countries loudly calls for thorough reform. In view of the increasing influence of sociology and the stagnation of parliamentarism, unceasing efforts are made to obtain for the members of the Sanitary Council such power in the departments of education as shall enable them to regulate the demands made upon the mental capacity of the young with due regard to the development of the rest of their organism, and to bring the ideals of mental education into harmony with the practical needs of political economy, instead of worshipping antiquated arrangements.

But the Austrian dentists are of the opinion that as long as admission to the university and the one-year voluntary service in the army is dependent on passing the matriculation examinations, the same should be required of those who intend to become dentists. For this opinion there are different reasons: First, the young and rising profession must desire that the social status of its representatives does not undeservedly sink below that of other branches of the art of healing. We dentists will not profane the spiritual inheritance of a Wedl, Salter, Heath, Garretson, Tomes, Leber, Rottenstein, Magitot, Mallasez, Muehlreiter, Albrecht, Mills, Underwood, Mummery, Miller, Zuckerkandl, Taft, Kingsley, Bonwill, Martin, Case, Essig, Brophy, Arkövy, Rothmann, Partsch, Sachs, Scheff, von Metnitz, Bödeker, Walkhoff, Wetzl, Ebner, Schaber, Zsigmondy, Gis, Roese Roemer, Preiswerk, and innumerable other researchers and promoters of our branch.

It certainly cannot be good for our science that less capable persons should receive official permission to enter it. Our calling cannot be raised in the opinion of the public, and of our colleagues the medical men, if in a country with compulsory military service the dentists should rank lower than the veterinary surgeons, and if practical dentistry is the refuge of such as do not get on well at the grammar school or the higher school.

Of not less importance is the moral factor, which is tellingly pointed out by the German teachers of dentistry in a memorandum to the Bundsrath of the German Empire. They say, "The demand for matriculation

gains increased importance through the consideration that all the knowledge and accomplishments, the most thorough instruction, can be made useful only if the dentist, beginning practice with a really high conception of his calling and with a large measure of faithfulness to duty, undertakes his task of making the progress of modern dentistry useful to his patient,—undertakes it with the moral maturity which is generally to be expected of older persons. Under present circumstances young men mostly enter the first class of the grammar school in their sixteenth or seventeenth year. Then they begin their dental studies, and mostly conclude them after three years, when they are in their twentieth year. Even supposing they then become assistants for two or three years,—which is the case with only a fraction of them,—they become independent at a time when in general they do not yet possess the manly stability and the mature gravity which are demanded by intercourse with the public and by responsibility in difficult situations, *e.g.*, administering narcotics, and in the carrying out with proper insistence the demands of dental science. No wonder, then, that many a one stumbles, and to his own detriment gives way to dangerous temptations: too often he has to lament that in his practice he should have turned from the creditable principles which he brought with him from the university, and should have taken to greedy bleeding of the public because in that way it seemed possible to make money more quickly and easily. The measure of care, perseverance, thoroughness, and faithfulness to duty possessed by a conscientious dentist is particularly large; the great pains and the expenditure of time necessary—and which at the moment, considering their object, seem extravagant—often tempt the less serious, immature characters to neglect their duty, and all too often, instead of painstaking, thorough work, which alone can be successful, there is a scamping done with dazzling facility and rapidity.”

Questions 2 and 3 of the International Commission of Education are—

“(2) Of what are dental studies to consist, how long ought they to last, and what should be the order of the programme?”

“(3) What branches of the studies taught in medical schools must the student of dentistry follow?”

For the Austrian the answering of these two questions becomes decidedly easier, and the report will seem clearer if the order of the questions be altered.

Since the Austrian dentists agree in the principle that dentistry forms a branch of the healing art in general, which demands its special education and training, the matter to be presented now resolves itself into the discussion of Question 3.

As was referred to in my report in collaboration with Dr. Zsigmondy to the International Dental Federation, London, 1901, I here again give expression to the conviction that the unexpected and enormous development of the entire healing art, as a branch of human knowledge which it is quite impossible for one person to master completely, loudly calls for a reorganization of the course of medical study. On the part of students and practitioners it is sought, by the requirements of the people one is compelled, to give the medical student first of all a three years' fundamental

education, and then to divide the remainder—say two years—of his course into branch subjects.

A common medical foundation for all those who later will devote themselves to a special branch of medicine affords, first of all, the advantage of admitting into the ranks of the profession only educated doctors with a wide mental horizon, and those whose powers of observation have been guided into the right channels; and secondly, such a foundation enables the student to decide on this special branch only after a deeper insight into the situation, and enables him with insignificant loss of time to change, if at the beginning of his special studies he should find that he has not chosen in accordance with his own inclinations and abilities.

In my opinion this general training to be demanded of all physicians would have to comprise the following departments: Descriptive anatomy, connected with practice in dissecting, physiology, histology, bacteriology, pathological anatomy, general experimental pathology, internal medicine, pharmacology, surgery, skin diseases, and syphilis.

It would be exceeding the limits of this report were I to point out in detail how important is each of the subjects above mentioned to him who wishes to have a real right to the name of doctor. The only argument that I will bring forward for the importance of the demand is that he who inflicts wounds for curative reasons should be acquainted with the course of the arteries, with the lymphatic glands, with the stopping of bleeding, the nature of wounds, and their treatment. The proposal that one and the same patient be treated by two or more specialists would be practicable sometimes in large towns, but not in small ones, and the simultaneous treatment by several doctors will meet with pecuniary difficulties as well as those of locality and time.

Having regard to our responsibility to our patients and the judicial authorities, the demand that medical practitioners should be acquainted with the appearance of syphilis and with the measures for protecting against its transmission is certainly amply justified.

As to the question, "Of what are dental studies to consist, how long ought they to last, and what should be the order of the programme?" On the ground of my own experience that even very talented and diligent Austrian physicians who, after finishing their medical studies, have devoted themselves to dentistry cannot without danger be employed in a good practice in a large town before the expiration of two or three years, I think it necessary that students' theoretical and practical instruction in the purely dental subjects (that is, after completing fundamental studies, lasting four or six terms) should comprise five or six terms.

First Year. Morning: Descriptive anatomy, with practice in dissection; physiology; bacteriology. Afternoon: Practice in chemical laboratory; histology and microscopy.

Second Year. Morning: General and experimental pathology; pathological anatomy; treatment of internal disorders. Afternoon: Pharmacology; afternoon visit to the clinic for internal diseases; theoretic lectures on dental surgery.

Third Year. Morning: General surgery; special surgery of the mouth

and maxillary sinus; skin diseases and syphilis; practical exercises in the preservative treatment of the teeth; phantom. Afternoon: Practical exercise in the surgery of the mouth and maxillary sinus (anæsthesia); practice in topographo-anatomical dissection (throat, mouth, and jaw); practical exercise in the surgery of the mouth and maxillary sinus (narcosis).

Fourth Year. Morning (8 to 9): Dental metallurgy; (9 to 12) practice in conservative dentistry (on the patient). Afternoon (1 to 3): Practice in the surgery of the maxillary sinuses (anæsthesia); (3 to 7) practical exercise with artificial teeth and jaws.

Fifth Year. Morning (8 to 11): Practical exercise in conservative dentistry; (11 to 1) orthodontia. Afternoon: Crown and bridge-work; obturators; mandibular splints. Examinations and services as demonstrators for the students of lower years.

A glance at this curriculum shows—

(1) That a dentist who has passed through it will be thoroughly competent to deal with every case that comes within the limits of his profession; it allows—

(2) Of the student's altering his plan of study in his third year without incurring thereby any serious loss of time or material disadvantage, if he should at that stage of his career have come to the conclusion that he has no vocation for the profession of dentistry; it also makes possible—

(3) The completion of the course of study in eight terms, if the educational authorities should think fit to sanction such an education on the ground of pecuniary difficulties, in exceptional cases.

This curriculum would have for its object the giving of exhaustive and detailed instruction, both theoretical and practical, in the following branches of technical knowledge: Theoretical lectures on the means known to dental surgery for the preservation of the teeth, and including the art of preparing and fitting artificial teeth and jaws; special surgery of the mouth and maxillary sinus, including practical exercises; practical exercises in the preservative treatment of the teeth; practical instruction in the preparation and fitting of artificial teeth and jaws; orthodontia; dental metallurgy; electrology.

The author of this report has ventured to conclude it by laying before his readers an approximate suggestion for a curriculum drawn up as a test for himself, to show whether his demands, as explained and elaborated above, could be brought into harmony with actually existing circumstances.

(To be continued.)

Editorial.

IMPORTANCE OF ANALYTICAL THINKING.

REASONING powers have been given to every intelligent mind to weigh and analyze the subjects that are daily brought in contact with the mental powers. It is this that distinguishes man from the lower forms of animated life, and it is this which should dominate every action and serve the purpose of the creation,—that of being progressively in advance of all things below and combining therewith a continued aspiration for the ultimate—the perfected man.

To acquire this means an independent attitude to all subjects called for consideration, and not a cringing subservience to authority, however fortified that may have been in supposed facts. The history of mankind is simply a relation of experiences, and these aggregated make up our civilization as we understand it in this the twentieth century.

Dentistry has had its share in this onward march to a more enlightened goal, and we to-day are congratulating ourselves that we have made greater progress, in a limited time, than some of the callings that have made the world happier by their presence. This may or may not be true. That it has given a valuable service to humanity cannot be denied, and that it will continue to have a share in the upbuilding of world-blessings there can be no doubt, and for this we, as partners in this work, must be duly grateful. But are we all doing this in the best way?

This question will be answered, doubtless, by the assertion that the best way has not yet been discovered, and that, therefore, we must go on blindly seeking the true and direct path, trusting that in the decades yet to be we may perchance stumble upon it and march forward directly to the haven of perfection, if that beatific state can ever be reached in mortality.

The most important step in this direction seems to the writer to be in an independent state of mind or condition in which authoritative statements are to be considered of value in proportion as they coincide with reason and accepted scientific data.

Dentistry to-day needs thinkers as well as readers. The words are not synonymous. The individual may read as the voluble parrot talks, but an analysis of the concept of the author may be entirely wanting. The result is mental barrenness, and, however valuable the work may be, it falls, like the good seed, on unfruitful soil, and brings forth no fruitage for the good of the profession. On the other hand, the thoughtful, reasoning reader will find a mine of value in it and mentally add to his or her storehouse of information, laid aside for future use.

What use shall be made of this stored knowledge? This will depend on the individual. The man who bases his life on authority will find in it pabulum for future essays to be brought forth upon proper occasions. Another phase of mind will find, it may be, the mental force leading to deeper investigation, to a more earnest questioning of nature, to advance, if possible, one step nearer the substratum of truth.

This latter character of mind is most needed to-day in our profession. It is a gratification to feel that this class is gradually growing to be in the ascendant, and we have the result in more original productions than at any period in dentistry, and this is universal throughout the world, not being confined to any one locality or division of civilization.

There is, however, much to be desired still among the many in productions of more originality. The literature of our profession is still burdened by prolixity. Writers seem oftentimes to feel that quantity is most important in their productions, and that this takes precedence of quality. Padding, to use a common phrase, is resorted to until the readers weary with the commonplace, and the question is uppermost in the mind, Cannot writers find some subject, if not original, at least to treat it with the flavor of originality?

A marked evil in this direction is the tendency to quote extensively. There is but little attempt made by those who adopt this method to verify statements, or to attempt to produce similar results. The so-called facts are assumed, and then begins the building upon a weak foundation which will never support a superstructure. This dependence upon authority is a general human weakness, but the true scientist makes only a limited use of this for his foundation work. He who depends upon books or the thoughts of other minds leans upon a fractured staff. We need to draw our own water from the deep cisterns, and thereby appreciate the value

of the labor and find out for ourselves whether the water is pure for the assuaging of our mental thirst.

The inherent tendency of most minds is to seek easy avenues of information. The undergraduate will use every effort to find some means to cram for examination. His elder brother, the practitioner, will do the same thing in another way, but both lazily hope to reach the end where superficial knowledge may serve instead of the analytical reasoning followed by an absorption of knowledge. In the long run the easy pathways usually lead into a wild and tangled mass of intellectual brushwood. The true solution is hard, thorough work and careful reasoning upon results, and, with this accomplished, the individual develops in mental stature.

The analytical mind is in one sense the creative mind, giving form to vague and seemingly unreal mental images. It is the antithesis of inaction; it earnestly seeks truth, never denies, nor will it accept assertion as equal to recorded fact. It has no room for mere faith, but cherishes hope, and is ever looking forward to the revelation of new possibilities in the realms of creative force.

This is education, whether it be in our calling or any other. Each has a special work to do in the world, and if this be done with the ever-mastering thought present that it must be done thoroughly, there will be no time for rest, neither will there be time to hunt up the dead past and depend upon it as the principal support, but rather to let it be as the dim rush-light of semi-illuminated history, serving to render brighter, by contrast, the still darkened territory of future investigations. For this we must all work while the day is ours, and steadily advance towards the higher professional life.

STEWART B. PALMER, M.D.S.

UNDER the proper head will be found a full and appreciative article upon the life and character of Dr. Palmer, from the pen of a correspondent very closely connected with him professionally in past years.

It is perhaps too early to analyze a character such as Dr. Palmer possessed. The personal influence he had over men during his life possibly has a tendency to warp judgment, not only in his case, but of all who have lived worthily and died honorably.

While this is true, it is difficult to feel that Dr. Palmer's worth as a man and as a dentist can be overstated. He had, like all original men, his peculiarities. These very frequently led to misconceptions of his true character. His scientific papers were not always understood and oftentimes not appreciated by the unthinking, but to the few they contained golden grains of pure thought, indicating deeper views in a substratum of invisibility.

Dr. Palmer's part in what was known as the "New Departure" did more, probably, to make for him a national character than his original work. This curious chapter in the dental history of this country may never be written out, but to those who were actively engaged in professional labor at the time, it presents, in memory, a vivid picture, in which Drs. Palmer, Flagg, and Chase are prominent figures, and back in the shadow stand the amazed fifteen thousand dentists of the country. They felt that the dictum of the Fathers, "That what was worth filling at all was worth filling with gold," was being trampled in the dust by sacrilegious hands. For a time this trinity of iconoclasts stood the severe criticism of the entire profession, the general feeling being that their views would never become part of the dental professional creed.

The faith in gold as a filling-material was, however, shaken. The articles written by this trinity of thought made eventually an impression, and caused men to stop and ask themselves, "Am I not doing myself and my patients an injury by this devotion to one material and one method in filling teeth?" Years have passed since this question was first asked and the answer may be read to-day in a modified practice in which all things available are regarded as proper for use in the salvation of teeth. The heat of that controversy has died, but, while we must regard the exponents as extremists, it must be conceded that great innovations and great reforms are only made possible by radical utterances and radical practice. The subservient individual, the "begging-your-pardon" man never stirs the world. Dr. Palmer was not one of these. Truth to him was of peculiar worth, not to be bartered for upon the counters of good opinion of the world. He sought it where it is best found, in communion with nature, and when these original investigations seemed to evolve facts to his comprehension, no power, however antagonistic, could change his position. Hence the flood of criticism of the new departure passed over him and left him unharmed. His gentle but uncompromising spirit said,

"Wait, time will show whether that which we believe be true or false."

This period in Dr. Palmer's life may be the most interesting to the biographer, but while it is of great value, the writer feels that it is not the most important or most impressive. His skill in his profession was recognized long before this time. He had much to do with the training of young men in a private way, and the result of his influence has been marked in the history of some of the most advanced in the dental profession. The love that these bear their preceptor is really the best monument to his worth in the world.

Dr. Palmer has been gathered into the realms of historical remembrance. He will be classed with that body of earnest men who made dentistry a possibility in this country. The doors have opened and shut many times to allow these to pass on to their eternal work in other spheres of activity, but of all those who have entered therein and passed from view, none will appeal more to loving remembrance than this gentle but indomitable spirit who showed his love for men and his profession best by being true to his highest conception of truth.

MEMORIAL WINDOW TO HORACE WELLS.

SUNDAY, April 12, witnessed an imposing service in Center Church, Hartford, Conn., in the placing of an artistic and symbolic window by Charles T. Wells, in memory of his father, the discoverer of anæsthesia, and of his mother, Elizabeth Wales Wells.

The Hartford Dental Society and the Hartford Medical Society attended as bodies, and were represented, the Dental Society by Dr. James McManus, its president, with some sixty members, and the Medical Society by Dr. William T. Bacon, president, and forty members; and in addition many visiting dentists and State and city officials.

"The 'Wells window,' as it will be called, is peculiarly rich in its deep and soft colorings, the figures are expressive, the posing effective, and the general plan in complete harmony with the windows which are near it. It is from the brush of Frederick Wilson, of the Tiffany studios in New York, and is of much artistic

beauty. The subject of the large decorative panel of the window is symbolical of the great work accomplished by Dr. Horace Wells in his discovery of anæsthesia. A sitting female figure with helmet and armor, sword in hand, and a shield with which she protects a kneeling figure, represents Righteousness, Faith, and Salvation, while the kneeling figure, with a white dove clasped to her bosom and wearing a wreath, symbolizes Mercy and Peace. The two are artistically posed beneath an ornamental arch supported by decorative pillars, the arrangement of the draperies and the expression of the countenances being handled remarkably well. As the kneeling figure seems to be imbued with a feeling of security on account of the protecting influence of the other, so does mankind rest secure in the knowledge that, owing to the research of Dr. Wells, it has security from the sufferings it was once called upon to endure.

“The inscription in the upper part of the window, ‘Mercy and Truth are together; Righteousness and Peace have kissed each other,’ is from Psalms lxxxv. 10, and, in view of the general recognition of the work that Dr. Wells did, is in a way symbolic of the close of the contest over the discovery. On one of the lower panels is the text from Revelation xx. 4, ‘Neither shall there be any more pain: for the former things are passed away,’ beautifully symbolizing the great benefit Dr. Horace Wells was to mankind by the application of anæsthesia to surgery.”

Bibliography.

PRINCIPLES AND PRACTICE OF FILLING TEETH. By C. N. Johnson, M.A., L.D.S., D.D.S., Professor of Operative Dentistry in the Chicago College of Dental Surgeons. With illustrations. Second edition, revised and enlarged. The S. S. White Dental Manufacturing Company and Claudius Ash & Sons (Limited), Philadelphia and London, 1902.

This book was fully reviewed when the first edition was given to the dental profession, and a careful examination of this, the second edition, fails to discover any marked change that requires special notice. There have been some additions, increasing the size

of the volume to fourteen pages of text. These additions do not materially affect the practical value of that portion of the first edition, which remains almost unchanged.

That the first edition should be exhausted in two years is evidence sufficient that this book has met a want in dental education, and, upon the whole, it has met this satisfactorily.

It has, however, some grave defects, in the estimation of the writer, and these were noticed in the original review. The author's views of extension for prevention are well known, and his faith in this heresy justifies his repeating them in this edition; but he must not expect some of the older members of our calling to endorse these. That they are and have been doing serious injury to the rising generation of dentists there can be no question. He still adheres to a "good, bold showing of gold from the labial aspect," as preferable to having the filling in "shadow," simulating a "black mass" of decay; and he further believes in extending a pin-head cavity on the proximal surface to below the gingival border, but is willing to admit that this may not always be necessary. He still regards that "in ordinary caries occurring near the contact point, and with the teeth standing in line one against the other, the rule should be to open the cavity to the occlusal surface." In other words, given a small cavity on the proximal surface of a bicuspid or molar, the operator is expected to cut away sound tissue until he reaches the occlusal surface, when, continuing his drill work, he burrows out a cavity of good size, in order to gain free access. If the writer has not misunderstood the author, he must regard such mutilation as a practice unworthy his reputation.

The chapter on "Destruction of the Pulp" remains practically unchanged, and yet there is much in it that seems to the writer radically wrong. The first advice, as to quantity of arsenic to use, may do for a student, but it is a poor way of expressing quantity to compare it to a pin-head. There seems to be a need for pathological enlightenment in the following quotation. After describing the use of arsenic, the author says, "In fact, it is usually best to wait a week or ten days before removing the pulp, to give ample time for the pulp to sever its connection at the apical foramen." The author seems to forget that the cause of this separation is decomposition of the pulp-tissue, and this means septic infiltration and a general liability to pericemental inflammation; and, further, is it possible to limit the action of arsenic to the pulpal side of

the foramen? Has the tendency of arsenic to destroy the life of the tissue any limitations unless its paralyzing power upon the nerves of the pulp be controlled by limitation of quantity? While it may be true of exceptional cases that there may be no pericemental inflammation resulting, it is certainly unwise advice to give the army of students who will regard this as accepted practice throughout the dental profession.

The author still uses the words "apical space" to represent the anatomical condition above the apex or apices of roots. This is a serious anatomical error, and should have been eliminated in this edition.

Due prominence is not given in this edition to "bleaching of teeth," and this is sought to be excused upon the ground "that it is scarcely within the province" of this work. It seems to the reviewer to be not only within the province, but quite an essential part. To fill an unbleached tooth, when that process is demanded, would be quite as bad as filling a tooth with a decomposed pulp, or treating teeth without first removing all deposits of foreign matter, and both of these important subjects are fully treated. In the future editions this should be elaborated.

It is somewhat remarkable that a work devoted to filling teeth and the preparation of cavities should omit any allusion to the instruments required to effect the result. Excavators, drills, and chisels have no place upon its pages.

Another singular omission is that nothing is said as to the importance of sterilization of instruments, and it fails to give satisfactory methods for the sterilization of canals containing putrescent matter. His reliance on alcohol and oil of cloves is not a solution of the problem of antiseptics in this particular locality, and expresses a poverty in dental therapeutics, when so many and much better antiseptics can be utilized for this purpose.

The object of again calling attention to some of the objectionable features of this otherwise satisfactory book is not so much in the way of criticism as to call these to the attention of the author. His book is being translated into other languages, and it might be well to qualify his strong and somewhat dogmatic statements as well as remove errors. When a book has been accepted as an authority upon the subjects treated, it becomes the duty of the author to revise it with the greatest care, for it is supposed at least to represent the standard of progress in the art of filling teeth in this country.

Incidents of Practice.

TREATMENT OF A CASE OF "DRY SOCKET." — A patient for whom a third molar had been extracted by a specialist returned two days afterwards for consultation, complaining of extreme pain in the face, and of the teeth in both maxilla simulating irritation of a pulp. Careful examination excluded the teeth. When the alveolus from which the tooth had been removed was examined, it was found devoid of the normal coagulum, with the bone bare.

A stiff dough-like paste, similar to a suppository, was made of orthoform, combined with oil of sesami and glycerin, with which the socket was filled. This means gave protection to the exposed tissue, as well as nearly immediate relief by the analgesic properties of the orthoform.—L. J.

SENSITIVE CERVICAL CAVITIES.—Occasionally patients come to us with one or more cavities at the cervical margin of the teeth. The mouth is unkept, the saliva ropy, the gums puffy with acute gingivitis. There is more or less green stain and accumulation of filth upon the teeth. This condition is very common among dispensary patients. The cavities are very sensitive to prepare for fillings. For many years I have applied iodine to the gums and teeth with good results. In such cases the gums, teeth, and cavities are saturated with iodine every day for from one to two weeks. The patient is required to use the "gum massage brush" to reduce the interstitial gingivitis. Alkaline powder like "vegetol" should be rubbed into the gums and cavities three times a day. If at the end of this period there is slight sensitiveness, local applications may be used at the time of cavity preparation after the rubber dam is applied.—E. S. TALBOT, M.D., D.D.S.

Obituary.

STEWART BAILEY PALMER, M.D.S.

A NOBLE man, who in practising our profession bestowed honor on it, has passed away from our midst.

Stewart Bailey Palmer, M.D.S., died at his home in Syracuse, N. Y., on March 30, 1903, aged eighty years, six months, and thirty days.

He was one of the pioneers of dentistry in the section of the country where he lived and where he has had a long professional life marked by the constant endeavor to keep his work up to the highest standard possible of professional excellence. That he succeeded in this is evidenced by the high esteem in which he was held by all those on whom he displayed his manipulative skill.

Dr. Palmer was one of those men whom circumstances and environment cannot suppress. Born and brought up on a farm, far away from any village, he received but scanty training from the country school of the district where he resided, as his duties at home prevented him from attending the school regularly, but the limited education acquired there did not satisfy his thirst for knowledge, for he was a born investigator, and when quite a boy a copy of Comstock's *Philosophy*, which was placed in his hands at school, fired his ambition to know all about the various subjects of which it treated, and thenceforth every moment he could spare from his regular duties was devoted to study and the acquisition of knowledge. In this way he qualified for a course at the Cortland Academy, a high-grade school, which he entered and took one term of instruction, which was all he could afford at that time. He finished this course in 1846, being then twenty-four years of age, but he was still unsatisfied, and he longed to be able to study and experiment along the lines of the knowledge he had acquired there. To do this he must have tools and material, but he had no means with which to get them. Shortly after he left school he was offered the position of teacher of the district school at Tully for the next year,—1847. This he gladly accepted. Here was an opportunity to get tools and whatever he wanted to pursue the

studies that would give him the knowledge he longed for. With the means thus acquired, and amid many difficulties, he went to work and succeeded in constructing working models of most of the implements and machines described and pictured in Comstock's *Philosophy*, which was the leading text-book used in the schools at that time. Among those he constructed were a working model of a steam-engine, an electric machine, a galvanic battery, etc. Here he was storing up useful practical knowledge and gaining manipulative skill in departments of science, which were soon to be put to a practical test that was to determine the destiny of his life. His teeth were of poor quality, and many of them were destroyed by disease early in life.

During the year 1847, while he was teaching school, he had nine of them extracted, but he could not then afford to pay for an artificial set of teeth. At that time the plates on which artificial teeth were mounted were made of either gold or silver. Although up to this time he had never been inside of a dental laboratory, or examined closely an artificial denture, the loss of his teeth made him very uncomfortable, and he had no money to have an artificial set made. As he became skilful in the use of tools, and the discomfort of his mouth annoying him, he often wondered if he could not make something that would relieve his discomfort. While he was in this condition he happened to go into a drug-store in Syracuse, and saw lying in a case on the counter a book with a set of artificial teeth delineated on the cover. He asked the druggist to let him see it, which he did, and upon examining it he found it was a treatise on dentistry, with illustrations, describing the mode of constructing artificial dentures. He asked if the book was for sale, and was told that it was and the price was five dollars. He did not have that much money with him, but he went to a friend of his father's in that town and borrowed three dollars from him, and went to the store and bought the book. He studied the contents until he thought he had acquired the knowledge he wanted, and determined to try and make a set for his mouth. He hammered out a plate from a silver dollar on an anvil in a blacksmith's shop, and thus equipped, commenced to make a set of artificial teeth to supply the deficiencies in his own mouth. He succeeded in doing this, and so well that he was solicited to make several artificial dentures for other people. In all the cases of this kind that he undertook his success was so

complete that he determined to adopt dentistry as the occupation of his life. And thus he embarked in a calling in which he was destined to become celebrated.

Having decided upon this course, he devoted all of his indomitable energy to acquire a thorough knowledge of all the best methods as practised by the eminent men of his chosen calling in those days. To gain this information so much desired, he sought and obtained interviews with all the distinguished dentists he could reach, and it is needless to write that he succeeded in obtaining the desired information.

In the following year, 1848, he became associated in dental practice with Dr. John L. Allen, at Fabius, which association continued until 1850, when he started in practice by himself, in Lafayette. In the same year he married Miss Elizabeth Jane Savery, now deceased.

In 1851 he moved to Tully, and remained in practice there until 1866, when he removed to Syracuse and entered into partnership with Dr. Amos Wescott, with whom he remained until 1868, when they separated, and he opened an office for himself; and from that time until he retired, about two months before his death, a period of thirty-five years, he continued to practise his profession in the city of Syracuse, making altogether a continuous practice of fifty-five years.

He has stated that from the moment he entered the dental profession his education has been a continuous advance in his profession throughout the whole of this long term. He said he was constantly stimulated by a desire for thorough knowledge on his part, and also stimulated and aided by dental literature and attendance upon dental meetings. Early in his practice he became a member of the American Dental Association, joining the latter in 1864 and always retaining his membership. In 1876 he was elected a member of the New York Odontological Society. He assisted in the organization of the Dental Society of the State of New York in 1853. In 1868 he received from the State Society (New York) the degree of M.D.S., Master of Dental Surgery. He was also an officer of the Fifth District Dental Society of the State of New York and a member of the Syracuse Dental Society. In 1872 he was elected a member of the Board of Censors of the Dental Society of the State of New York, and continued a member of that board until 1895, when the Legislature of New York

gave the power of granting licenses to practise dentistry to the Regents of the University, and created a Board of Examiners in Dentistry to examine the candidates applying for such license. Dr. Palmer was appointed a member of that board when it was organized, and continued in that capacity until he died.

During the whole of his long professional career he continued to be a close student in the different departments of science, particularly in those that could in any way be utilized in the practice of his profession. In the early part of his professional life his investigations were principally carried on in the departments of mechanics and chemistry, but later his investigations were directed to the subject of electricity, in which branch of science he became an enthusiastic student and investigator, which resulted in his promulgating the theory of "vital electricity" and its application to the cure of disease, particularly to those diseases that are treated by the dentist. In this direction he claimed to have made some important discoveries. Like all men who promulgate new ideas, he met with those who opposed his views. But Dr. Palmer was always a careful and patient investigator, and never put forth any theory until he was thoroughly convinced that it was a correct one, and then, having reached his conclusions and promulgated them, he did not seem to care to argue with those who opposed them, but contented himself with stating them clearly and then leaving the matter with the remark, "*Well, time will tell whether I am right or not, and I can afford to wait.*" For, above all things, he disliked a wrangle or a quarrel. In fact, he was always a peacemaker, for nothing seemed to distress him so much as a dispute or quarrel, and when one occurred where he was, either among his friends or during the meeting of a society he was attending, his whole energies and influence would be at once exerted in the cause of peace and good-will. Dr. Palmer was an extensive contributor to the literature of his profession, and his contributions are a valuable part of its scientific accumulations, and they will become more and more valuable when they are better known.

Some years ago Dr. Palmer, in connection with Dr. Flagg, of Philadelphia, for whom he always had a strong friendship, announced their doctrine of the "New Departure" in dental practice, which announcement caused a great sensation in the dental profession of this country. The "New Departure" was received with violent opposition by a large majority of the best practitioners

of that time, and it would probably not have been considered at all if it had not been for the great respect that was entertained for the character and attainments of Dr. Palmer. But he was known to be a careful and reliable investigator and a man in whom everybody had faith. Time proved that the new doctrine was generally regarded as true. And Dr. Palmer lived to see it acknowledged as such. So that his motto, "Well, time will tell whether I am right or not," was verified, and time developed the correctness of his theory and his justification in presenting it.

There was combined in his character a large amount of amiability and gentleness, with great firmness of character and an indomitable will, when it became necessary to use it. But in his ordinary intercourse with his fellow-men he was courteous, with a most happy genial manner that made him a most charming and intelligent companion.

Dr. Palmer's father, Avery F. Palmer, was born in Stonington, Conn., where their ancestor, Walter Palmer, from England, first settled in 1629. His great-grandfather, the Rev. Wait Palmer, was pastor of the first Baptist church of North Stonington. Dr. S. B. Palmer was associated with the first Presbyterian church of Syracuse.

Dr. Palmer was a large-hearted man, with a nature overflowing with kindness, good-will, and affection, and to his intimates and friends his personality will ever be a most pleasant memory, for he was one of the truest of men where he gave his friendship or love.

As regards his domestic relations, one who knew him and his family intimately has said of his household, that it was the most harmonious and the happiest one he had ever known.

This could hardly have been otherwise when it is known what a fortunate man he was in obtaining the kind of wife that he did, for in her he had a most congenial and charming companion for the first forty years of his professional life, and it was a fearful blow to him when he lost her. She was a woman blessed with a most cheerful and affectionate disposition, and, like her brother, the Hon. John Savery, of Cato, N. Y., gifted with large mental capacity. She was devoted to her husband, of whom she was very proud, and had entire faith in his ability and the feasibility of his projects. She was always ready to help him in any way that would contribute to the success of his undertakings. And this was done

with a cheerful willingness and ready intelligence that made her a most efficient coworker, and she was never so happy as when she was helping him in this way. After the death of his wife, his sister, Mrs. S. C. Brooks, took charge of his household, and he had her affectionate and devoted care and companionship to the end of his life.

His official duties as a dental examiner for registration to practise dentistry brought him in contact with many young men just entering the dental profession. In these and all other young practitioners he was always deeply interested, and to many of them his kindly advice and assistance was always encouraging, and sometimes he was able to direct their career to a successful result, notably in the cases of Dr. John S. Marshall, of Chicago, for it was upon his recommendation that Dr. Allport engaged him as his assistant. Dr. Marshall eventually became Dr. Allport's successor, and thus was enabled to attain an eminent position and a reputation that is world-renowned.

Another instance is Dr. G. Lenox Curtis, of New York, for it was by Dr. Palmer's advice that he qualified himself for the career he is now pursuing as an oral surgeon.

Such evidences of Dr. Palmer's "helping hand" could be multiplied *ad infinitum*, and will make the memory of him dear in many a grateful heart.

His intercourse with his professional brethren was of that character that always commands respect, and those of them who knew him well will remember their acquaintance with him as a bright, green spot in their lives. To his fellow-townsmen his death is an irreparable loss, for he had been a member of their community for over thirty-five years and was known to all the principal people of the town, who respected and honored him as one of their most distinguished citizens. The large attendance at his funeral has shown their appreciation of his worth and their desire to do honor to his memory.

On the day of his funeral his body lay at the First Presbyterian Church, where the services were held, and hundreds assembled there to take a last look at his kindly, familiar face. The Syracuse Dental Society attended in a body, and there were also present over a hundred dentists from different parts of the country. The organizations represented at the funeral services were the National Dental Association, the New York State Dental Society, the Fourth, Fifth,

and Seventh District Dental Societies of New York, The Institute of Stomatology of the City of New York, and the Syracuse Dental Society.

The funeral sermon was preached by the Rev. Dr. George B. Spalding, who, in a discourse full of emotional eloquence, declared that the death of Dr. Palmer, while it is a serious loss to the dental profession, was a great calamity to the large circle of devoted friends who were most affectionately attached to him by the sympathetic loveliness of his character.

Dr. Spalding said he had lost a dear friend. "I knew and believed in him as if he had been my father. He was a man without guile, whom you believed in implicitly the moment you looked in his honest, trust-inspiring eyes."

The honorary pall-bearers were Dr. O. J. Gross, of Schenectady; Dr. A. M. Wright, of Troy; Dr. Frank French, of Rochester, who were Dr. Palmer's associates in the Board of State Dental Examiners, and Dr. R. H. Hoffheinz, of Rochester, the president of the New York State Dental Society. The active bearers were Dr. J. H. Dower, Dr. J. E. Cummings, Dr. G. H. Butler, Dr. A. F. Smith, and Dr. C. H. Barnes, all of Syracuse, and Dr. A. D. Wells, of Skaneateles.

The body was taken to Tully for burial, and all the dentists present at the funeral escorted the body from the church to the railroad station.

The case of Dr. Palmer is the only instance in the history of the dental profession where the death of one of its members has created the demonstration of sympathy and sorrow in so large a proportion of a community as large as that of Syracuse. And it illustrates the magnetic character of the man and the influence his splendid qualities had upon the community in which he lived. Hundreds of letters of sympathy and condolence are being received by his friends, many of them paying the highest tribute to his worth and ability. One from Dr. Farrar gives expression to this sentiment: "The great dentist, with his smiling face; his very thoughts could be read by looking in his eyes; he will long live among the thinkers of the profession."

The Rev. George B. Spalding, D.D., his pastor, writes: "His death leaves a great break in the army of dentists. I wish we had more like him."

Dr. James Truman says of him, "He has been to me the em-

bodiment of all that was to be found in dentistry. He has ever been faithful to it, as he has been faithful to the light that made brilliant his inner being and from there reflected to an unbelieving professional world. He was free from dishonesty and hypocrisy. He has a clear record. His death ends a noble life on earth, but does not end the great cycle of activity belonging to an infinite mind."

Thus those who knew him speak of him, all eulogistic of his beautiful character and the splendid gifts he employed so wisely for the benefit of humanity. Requiescat in pace.

C.

Current News.

NEW JERSEY STATE BOARD OF REGISTRATION AND EXAMINATION IN DENTISTRY.

THE New Jersey State Board of Registration and Examination in Dentistry will hold its semiannual examination on Tuesday, July 7, Wednesday, 8, and Thursday, 9, 1903, in the Assembly Room of the State-House at Trenton, N. J. Sessions will begin promptly at 9 A.M.

All applications must be in the hands of the secretary ten days prior to the examination.

J. ALLEN OSMUN,
Secretary Dental Commission.

ILLINOIS STATE DENTAL SOCIETY.

THE thirty-ninth annual meeting of the Illinois State Dental Society will be held in Bloomington, May 12, 13, and 14, 1903. A large programme of interesting essays and clinics has been prepared, and a splendid meeting is expected.

The railroads throughout the State and from St. Louis will make a rate of a fare and one-third, certificate plan, for the round trip. All are cordially invited. Remember the date.

A. H. PECK, *President.*
HART J. GOSLEE, *Secretary.*

MISSISSIPPI BOARD OF DENTAL EXAMINERS.

THE Mississippi Board of Dental Examiners will meet in the city of Jackson, May 26, 1903, at 8.30 A.M.

J. P. BROADSTREET, D.D.S., *President*.

W. R. WRIGHT, D.D.S., *Secretary*.

LEBANON VALLEY DENTAL ASSOCIATION.

THE twenty-eighth annual meeting of the Lebanon Valley Dental Association will be held at Harrisburg, May 19 and 20, 1903.

The programme, which is a very good one, will be forwarded in due time. *Come*, and bring something of interest with you.

A general invitation is hereby extended.

H. W. BOHN,

Chairman Executive Committee.

KENTUCKY STATE DENTAL ASSOCIATION.

THE Kentucky State Dental Association has changed the date of meeting to May 25, 26, and 27, 1903, at Bowling Green.

C. R. SHATTUCK,

Secretary.

LOUISVILLE, KY.

PENNSYLVANIA STATE DENTAL SOCIETY.

THE thirty-fifth annual meeting of the Pennsylvania State Dental Society will be held July 7, 8, and 9, 1903, at Harvey's Lake, Pa., which is delightfully situated near Wilkes-Barre.

This choice location is central, convenient to reach, and as near the ideal as is possible to obtain. Hotel accommodations are first-class and rates reasonable.

The Committee proposes to make this meeting a notable one; in fact, by far the best we have ever held in this State. An exceptionally interesting programme is being arranged, which includes papers and clinics from some of the most distinguished specialists.

Exhibitors have promised to lend their aid by exhibiting all the

latest modern scientific devices. Every article of interest to the profession will be represented, and may be purchased from exhibitors. To keep posted regarding practical scientific advancements, this opportunity should appeal to you.

We ask every dentist, whether a member of the Society or not, to use his influence in making his own State meeting a memorable affair and a credit to the profession.

H. B. MCFADDEN, D.D.S.,
HOWARD S. SEIP, D.D.S.,
JAMES P. NICHOL, D.D.S.,
Executive Committee.

MISSOURI STATE DENTAL ASSOCIATION.

THE Thirty-ninth Annual Meeting of the Missouri State Dental Association will be held at Kansas City, Mo., May 19, 20, and 21, 1903.

Reduced railroad and hotel rates have been secured, and a very large attendance is assured.

A number of dentists of national reputation, among them Drs. J. B. Willmont, Toronto, Canada; E. K. Wedelstaedt, Minneapolis, Minn., and A. C. Searl, Owatonna, Minn., will present features and give clinics.

All ethical members of the profession are cordially invited to attend, become members, and take part in the discussions.

OTTO J. FRUTH,
Corresponding Secretary.

NEW ORLEANS ACADEMY OF STOMATOLOGY.

THE annual meeting of the New Orleans Academy of Stomatology was held in the assembly-room of the New Orleans College of Dentistry on Wednesday, March 11, 1903. After the transaction of routine business and the reading of interesting papers the following officers were elected to serve for the ensuing year:

President, Dr. H. P. Magruder; Vice-President, Dr. J. H. Landry; Secretary and Treasurer, Dr. Paul de Verges.

Executive Committee.—Dr. L. D. Archinard, Dr. C. V. Vignes, Dr. V. K. Irion.

The Academy meets on the fourth Wednesday of each month.

The essayist at our next meeting will be Dr. M. R. Fisher.

PAUL DE VERGES,
Secretary and Treasurer.

CENTRAL DENTAL ASSOCIATION OF NORTHERN NEW JERSEY.

At the annual meeting of the Central Dental Association of Northern New Jersey, held at Newark, February 16, 1903, the following officers were elected:

President, William H. Pruden, D.D.S., Paterson; Vice-President, C. W. Hoblitzell, D.D.S., Jersey City; Treasurer, Charles A. Meeker, D.D.S., Newark; Secretary, Fred. W. Stevens, D.D.S., Newark.

Executive Committee.—J. A. Voorhees, D.D.S., Chairman, Newark; Frank Manning, D.D.S., Secretary, Elizabeth; J. S. Vinson, D.D.S., Newark; W. W. Hawke, D.D.S., Flemington; J. S. Dunning, D.D.S., Paterson.

FREDERICK W. STEVENS,
Secretary.

588 BROAD STREET, NEWARK, N. J.

NEBRASKA STATE DENTAL SOCIETY.

THE Nebraska State Dental Meeting will be held in Lincoln, Nebraska, May 19 to 22, 1903, inclusive.

H. R. HATFIELD.

MASSACHUSETTS DENTAL SOCIETY.

THE thirty-ninth annual meeting of the Massachusetts Dental Society will be held in Mechanics' Building, Boston, Wednesday and Thursday, June 3 and 4, 1903.

EDGAR O. KINSMAN,
Secretary.

CAMBRIDGE, MASS.

THE
International Dental Journal.

VOL. XXIV.

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No. 6.

Original Communications.¹

BAKED PORCELAIN RESTORATIONS OF BROKEN
BRIDGE FACINGS.

BY DR. JOSEPH E. DUFFIELD, CAMDEN, N. J.

MANY vain efforts have been made to repair fixed bridges and broken crowns where the facings have split away from the backing, due either to accident or to occlusion which has been too close to permit of proper protection by the usual means. Those attempts have included the Bryant method of cutting a thread on the pins and attaching by means of a nut; cutting a dovetailed cavity in the backing and bending the pins of the tooth so as to key the work in place, and various other systems. Undoubtedly it requires no ordinary skill to so grind a plate tooth that it may approximately fit the backing already in position, and which is invariably of such thickness as to not permit of any adaptation by burnishing.

Again, after the tooth has been ground and fitted to the entire satisfaction of the operator, and the pins of the tooth in question passed through the openings in the backing, which have been very carefully tapped out to accurately receive the same, we so often

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

find the thickness of the backing such as to prevent of sufficient countersinking on the palatal surface, thereby preventing the work from being securely and permanently attached by riveting or by tinning the pins and filling in with amalgam.

To the writer one of the most objectionable features of the plans employed in repairing those conditions has been the utter lack of close adaptation of the parts repaired.

For the following operation which was evolved, and which has proved very satisfactory after a test of now nearly three years, two points of superiority are claimed,—first, perfect adaptation; second, strength; two very essential features, and upon which rests the success of the work.

In the employment of the method about to be described, it is necessary that the pins remain intact in the backing. After clearing away all particles of porcelain, which may be adhering to the pins from the fractured facing, a cement filling is built around the same, making the sides parallel, the cement extending in a lateral direction only far enough to include the overhang of the pin-heads, the filling being flush with the tops of the pins; the object being to permit of the free drawing of the matrix about to be made. (Fig. 1.)

Platinum-foil, gauge $\frac{1}{1000}$, is then burnished over the entire backing, the cement filling being permitted to protrude through the platinum-foil and extend well up on the adjacent teeth. (Fig. 2.)

The matrix is then removed and laid aside, and a small piece of foil, cut oblong and sufficiently large to cover the cement filling and extend down the sides of the same to the backing, is then prepared by slitting from the four corners. (Fig. 3.) The object is to burnish the foil over the filling and form a box without tearing (Fig. 4.)

With the box still in position, the matrix already described is again placed on the backing and the two pieces joined with a small amount of paraffin. The entire work is lifted off and the paraffin eliminated by holding in a flame; a quantity of tooth body of the desired shade is then placed on the matrix and fused. (Fig. 5.)

There now being no danger of destroying the perfect adaptation by handling, it is again placed in position on the backing and a porcelain veneer or plate tooth, from which the pins have been removed, and of a proper shade, is ground in position. Additional tooth body is added to the matrix and the under side of the veneer,

FIG. 1.

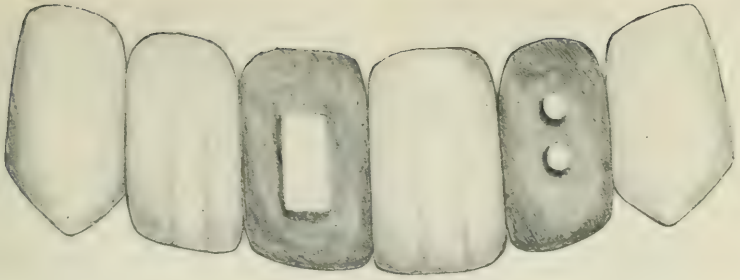


FIG. 3.



FIG. 2.



FIG. 4.

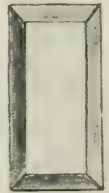


FIG. 5.



FIG. 7.

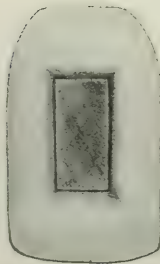


FIG. 6.



which is then placed on the matrix and gently pressed in position. A few blasts of hot air are applied to carry off the superfluous moisture in the body, and with an excavator the matrix and venter, as one piece, are gently lifted off the backing and allowed to fall on a doily. (Fig. 6.) It is then placed in the furnace and fused. The platinum-foil is stripped off from the back, and with a small diamond disk the box or countersunk cavity in the porcelain is undercut. The cement about the pins in the backing is removed, and the work is ready for final cementation to position. (Fig. 7.)

If the operation has been carefully executed, we now have a repair which in point of contour and adaptation is eminently satisfactory, and one which is approximately as strong as the original.

THE DENTAL PULP, VIEWED WITHOUT THE MICROSCOPE.¹

BY THOS. E. CONSTANT, M.R.C.S., ETC., SCARBOROUGH, ENGLAND.

BEFORE entering upon the subject-matter of the present paper may I be allowed to express my appreciation of the honor conferred upon me by the invitation of the Council of the American Medical Association, an Association which enrolls in its list of membership names which are known to and revered by scientists all the world over. The invitation was not accepted without diffidence, for the subject allotted is a narrow one and the investigators many and devoted; indeed, it may safely be affirmed that during the last decade no structure in the human body has been more often or more closely scrutinized than the dental pulp. The majority of the observers have, however, given most attention to those points which require the microscope for their elucidation, and it is partly on that account that I intend to-day to confine myself to the macroscopic aspect of the subject.

The human dental pulp has been arbitrarily defined by an American writer as commencing during the fourth month of the fetal existence. Prior to that time it is the "dental papilla." This distinction is convenient, and, although I am ignorant as to whether

¹ Abstract of a paper read before the American Medical Association, Section on Stomatology, New Orleans, May 5 to 8, 1903.

it has met with general acceptance in this country, for the purposes of the present paper I shall adopt it.

At the end of the fourth month of fetal existence dissection reveals the pulps of the milk-teeth as translucent gelatinous substances, which roughly correspond in shape to the crowns of the teeth which are respectively formed from them. They are generally described as lying in a shallow groove or gutter of bone which is all that exists at that period of what is later known as the alveolar portion of the jaws. The pulps are severally surrounded by a membrane to which they are not anywhere adherent except at their bases. Between the investing membrane and the pulp there is always a fluid which John Hunter likened to the synovial fluid in joints. In the case of the lower animals this fluid is often found in considerable quantity. The membrane is, of course, the tooth-sac. What the fluid is I do not know. By stripping the periosteum from the jaws the tooth-sacs and their contents can be removed entire from the gutter of bone in which they lie. At this period (fourth to fifth month), when the dental sacs have been thus removed the groove in which they lie is found to be traversed in the incisor region by slight ridges, which form the commencement of the alveolar septa between the incisor teeth. On opening the tooth-sacs they are found to be adherent below to the tooth-pulps and above to blend indistinguishably with the oral mucous membrane. The apices of the pulps show signs of commencing calcification, the incisors being tipped with little caps of bony material. As calcification proceeds these caps gradually increase in thickness and extend downward over the sides of the pulps, and at the end of nine months of fetal existence the central incisors are about two-thirds calcified; that is to say, the edge of the calcified caps almost reaches the bony floor upon which the pulp rests. In the mean time the bony gutter has undergone a marked transformation. Its edges have grown up around the pulps and the transverse ridges already mentioned have also grown up, forming complete septa between the developing incisor teeth. In the same way the pulps of the developing cuspid and molar teeth have been enclosed, bony septa of which there was no indication at four months having sprung up. Thus each developing tooth has become enclosed in a separate crypt, the floor of which is formed by the original gutter of bone, the labial and lingual walls by the upgrowth of its edges, and the mesial and distal by the upgrowth of the bony septa. Most of the

text-books state that it is about this time (nine fetal months) that a roofing in of the crypts takes place by an arching over of the walls. Thus Broomell writes in describing the development of the crypts:

“Beginning with a simple groove, or gutter, into which the tooth follicles hang, the follicles exerting a controlling influence over its form. Next comes the appearance of septa between the anterior follicles, which at this period are somewhat irregularly placed in the arch, followed in a few weeks by a well-defined partition between the cuspids and molars, until finally, at birth, each follicle is enclosed in its individual crypt, with the single exception of the second molar, in which the distal septum, or that which is to separate it from the first permanent molar, has not yet made its appearance. As the tooth-follicles increase in size, by the development of the teeth within, they become more perfectly enclosed in the bony vaults, the sides of the alveolar walls arching over and almost completely enclosing the developing teeth.”

Tomes, speaking of the condition of the mandible at the time of birth, quotes: “The alveolar margins are deeply indented with large open crypts.” As a matter of fact, both of these descriptions are incorrect, for in the nine months’ foetus and at birth the crypts are completely closed. It is true that the bone which forms the roof of the crypts is very thin and parchment-like, but it is always there. Broomell is wrong, too, in his description in so far that he makes it appear that the roof is formed very late and by an arching over of the walls. The roof, such as it is, is complete before the bony septa between the various teeth, and what is usually described as a groove or gutter is really a tunnel with a very thin bony roof. There are one or two specimens in the museum of the Odontological Society of Great Britain which illustrate this very clearly. At birth, then, the dental pulps and their partially calcified crowns are completely enclosed in bony crypts. In any dry specimen in which this bony roof is found complete the external surfaces of the calcified crowns within the crypts are invariably found to lack the lustre and vitrified appearance one finds upon the surface of adult teeth. In a crypt from which the roof has been partially or wholly absorbed the tooth-crown is found to be completely calcified; from which we may, I think, infer that completion of the process of amelification is the necessary prelude to absorption of the roof of the crypt. At the time when this absorption occurs the bases

of the crowns are in closer contact with the floors of the crypts in which they are contained than at any other time, but there always intervenes, of course, the vascular tissue which marks the junction of the tooth-sac and the pulp.

It is in the unfamiliar character as the active agent in the translation of the teeth from the crypts in which they originate to the position they finally occupy in the mouth that I wish you to make the acquaintance of the dental pulp to-day. To do this it was first necessary to remind you of its anatomical relations, which have been altogether ignored by the authors of the various theories which from time to time have been advanced to explain that interesting developmental process which we term "eruption of the teeth." Before stating the case for the dental pulp let us pause a moment to consider these theories.

One of the oldest of them is that the eruption of the teeth is due to the elongation of their roots. As long ago as 1835 Thomas Bell wrote: "As ossification proceeds, the roots of the teeth continue to elongate, until first those of the incisors, and subsequently the others, can no longer be contained within the alveoli." This theory is still very popular, but against it the following insuperable objections have been raised: First, that the distance travelled by the crown of the tooth is sometimes greater than the length of its root. Secondly, that teeth with comparatively little root sometimes erupt, whilst others with fully formed roots remain unerupted. Thirdly, that teeth with roots fully formed may remain unerupted for some length of time and then subsequently erupt.

The following quotation from an article by Dr. Pierce, entitled "The Eruption and Structural Relations of the Deciduous and Permanent Teeth," in the "American System of Dentistry" (1887), clearly shows that there are some writers who even yet regard this theory with favor. He says, "The absorption of the superimposed tissue from the advancing crown and the elongation or growth of the root by an increase in the pulpy mass or formative tissue and its calcification are the progressive developmental processes which we term 'eruption of the teeth.'

"The force by which the teeth are propelled towards and through the mucous surface into position is thought by many to be something in addition to that indicated above as the result of normal growth."

In explanation of the eruption of teeth with unformed roots,

Dr. Pierce writes, in the same article: "The question at once arises whether such premature presentation of the tooth-crown is not wholly due to an absorption or wasting of the superimposed tissue, rather than to the elevation of the crown, which could not well take place without the growth of root, unless it were from the contraction or an expulsive effort of the tooth follicle." The same writer offers the following ingenious explanation of the eruption of teeth with roots that were fully formed some time previously: "There is a mechanical force, however, acting on all such teeth, tending to bring them to the surface, the same as on an unantagonized tooth, inducing its elongation or protrusion from the socket. The repeated closing of the jaws must exert to a large extent this mechanical force, just as the bung in a barrel is elevated by a blow being struck upon the stave or either side of it."

Tomes's explanation of the same phenomenon is not quite so ingenious, but, as will appear later, is not less unsatisfactory. His account of the eruption of a canine tooth of a human female at the age of forty-five is as follows:

"Supposing it, then, to be admitted that the tooth was completely developed before the process of cutting commenced, the process in itself must be in some respects different from that which occurs when teeth are cut under ordinary circumstances. When the process is normal as respects time and the stage of development of the tooth, the crown appears through the gum long before the root has attained its full length. The crown is in great part brought towards the surface of the gum by the progressive lengthening of the root, and is afterwards still further raised by the same process. Now, when the eruption is accomplished subsequent to the development of the root, the movement of the tooth must be effected by some other means than by the progressive lengthening of the root. The completed tooth has to change its place without itself undergoing any change. The bone which stands in its way must be absorbed, and the lower portion of the socket from which the root of the tooth emerges must be contracted by the deposition of the bone. Indeed, in the absence of a better hypothesis it may be assumed that the gradual contraction of the socket is the means used by nature for bringing teeth to the surface when the process of eruption has been delayed beyond the normal period. In the one case the movement is effected by the development of bone

within the alveolus, in the other by the progressive development and consequent lengthening of the tooth."

Another theory that for a time held sway was that of Delabarre. The following account of it from Harris's "Dental Surgery" (1863) is almost touching, and shows the fascination it exercised over lovers of analogy:

"The able physiologist and learned dentist, Delabarre, has advanced a most ingenious theory upon this subject. He believes that the passage of a tooth through the gum, or rather its escape from its crypt, is effected in precisely the same manner as is the birth of a child. He regards the sac attached above to the gum and below to the neck of the tooth as the chief agent in the eruption, and believes that it is by its contraction that the latter is raised from the bottom of the alveolus and ultimately forced through the dilated orifice of the capsule and gum. This is the most rational theory that has been advanced; it explains upon principles of sound physiology this most wonderful and curious operation of the economy."

This romantic theory lost favor chiefly because its most ardent supporters were unable to demonstrate the slightest resemblance between the dental sac and the female organ to which they imagined it was analogous. It would not have been included here were it not that a passage in one of the above quotations from the writings of Dr. Pierce indicates that the theory has not yet lost its pristine power.

It must have been the improbability of Delabarre's theory that encouraged Coleman to propound another, the acceptance of which would involve the abandonment of existing views as to the growth and development of the jaws. He imagined the teeth to be carried to the surface by a series of "bone currents," in other words, by interstitial growth of bone peculiar to the jaws, and then laid bare by the absorption of the alveolar margins. The reluctance displayed by our leading physiologists to lay aside their views as to the growth of bone, and to accept Coleman's, no doubt largely accounts for the modified enthusiasm with which his theory has been received. The greatest objection to it, perhaps, apart from this, is that while it accounts more or less satisfactorily for the eruption of the teeth, it fails to explain how it is that some teeth never do erupt. It is difficult to imagine a lateral or canine tooth stemming the tide of bone-currents that its immediate neighbors have found it impossible to resist.

Another theory is that the teeth are raised by a deposit of bone at the bottom of the crypts in which they are contained; and yet another (which is the last to be considered here) is that the teeth are forced into their destined places by contraction of the alveoli. Of these two theories, the latter would only account for the eruption of such teeth as have a single conical root, because in the case of teeth with two or more roots such contraction would tend to retard rather than assist eruption; while the former rests upon an assumption for which, as we shall presently see, there is absolutely no foundation.

I would here draw your attention to a diagram which represents a specimen in the Museum of the Odontological Society of Great Britain. It shows as clearly as possible that the distance of the bottom of the crypt containing the second molar from the interior dental canal is very little less than the distance of the apices of the roots of the first molar from the same landmark. It is clear, therefore, that the eruption of the first molar could not have been due to bone deposition upon the floor of its crypt. Reference to the same illustration will also convince you that narrowing of the alveoli containing the roots of the first molar would have retarded rather than assisted its eruption.

It appears to me that the chief objection to the root elongation and bone formation theories is a physiological one. It is extremely difficult to conceive such a process as dentine formation exercising independent mechanical force! But granting that it may be so, upon what structure is that force exercised? in other words, to put the matter clearly and concisely, if somewhat vulgarly, what does the root shove against?

Since the forming root is never in actual contact with its bony surroundings, it must necessarily be against the vascular material in which it is embedded. Now, this tissue appears post mortem of far too jelly-like a consistence to oppose any effective resistance by virtue of its own structure, and yet such resistance there must be or the tissue would be obliterated. Whence, then, are its resisting properties derived? Necessarily from the blood-pressure. Therefore, assuming that the physiological process of dentinification *can* exercise independent mechanical force and *is* a factor in the causation of eruption, it must, since action and reaction are equal and opposite, divide the honors with the blood-pressure—a factor hitherto quite unrecognized. Indeed, it is obvious that any

vis a tergo must act through the vascular material surrounding the root; and it follows that such force cannot be greater than the blood-pressure or it would cut off the blood-supply to the root.

But is a force other than the blood-pressure a necessary hypothesis when we consider the exceptionally advantageous conditions under which it acts? Let us illustrate these conditions by a diagram.

A, B, C, and D represent a section through a lower molar tooth and its crypt at various stages of development. In A it is obvious that the pulp forms a fleshy column of vascular tissue upon which the crown really rests. The pulp itself is injected by the force of the blood-pressure entering almost directly from A', an artery of considerable size. Under the calcifying margins of the crown is the pad of tissue that forms the junction of the sac and pulp, and between the crown and the walls of the crypt is the vascular tooth-sac which is injected from the same source as the pulp. Above the crown is the oral mucous membrane and submucous tissue. Now it is obvious that the blood-pressure exerted in the pulp-tissue acts upon the crown at a considerable mechanical advantage in comparison with the pressure in the tissues overlying the crown. Indeed, it is only necessary to glance at the diagram to understand how it is that some teeth travel so quickly to their destined position when once their crowns have emerged from the gum. In fact, with regard to this point, it is a marvel that dentists who have many opportunities of observing the rapidity with which teeth sometimes move during eruption should ever have been induced to regard the comparatively slow process of dentinification as the active agent in the matter. As eruption proceeds, so does root formation, the former making space for the latter. Indeed, if I may be allowed to illustrate the process in a homely fashion and in the way it presents itself to me, the mechanism is somewhat similar to that employed by a sweep in cleaning a chimney. I do not know whether you, in this country, have improved upon our method of "chimney-sweeping," so perhaps I had better explain that our sweep employs a circular brush and a bundle of rods with screw joints. He places the brush in the chimney and screws in the first rod, then he pushes the brush up the chimney the length of the rod, and then screws in another rod, and so on. Now, the sweep represents the pulp, the force he uses to push the brush up the chimney represents the

A

B

C

D



Section through a lower molar tooth.

blood-pressure, and the screwing in of a fresh rod represents the various stages of root formation.

Referring again to the diagram, we notice that each stage in the formation of the root diminishes the extrusive tendency of the pulp, until when the root is complete it becomes practically *nil*. Moreover, after the tooth-crown has emerged from the gum the tooth-sac, which has now become the peridental membrane, forms a ligament for the tooth, being attached both to the roots and to the socket. The vascularity of this membrane still endows it, however, with an extrusive tendency which is in itself sufficient to account for the gradual elongation of unopposed teeth, and is probably the chief means by which the proper occlusion of opposing teeth is maintained. If we have any doubt, in the case of healthy teeth, as to whether this elongation is due to the normal blood-pressure exerted in the peridental membrane, they should surely be dispelled by the clinical phenomena that present themselves when the blood-pressure is pathologically augmented; in other words, when inflammation of the peridental membrane supervenes. When we consider the mechanical conditions illustrated by the foregoing diagram in conjunction with the pulsating and expansive force exercised by the blood-pressure, does not the necessity for another eruptive force disappear and Dr. Pierce's bung-and-barrel explanation of the elongation of unopposed teeth become somewhat superfluous?

If we assume that the blood-pressure, acting in the manner above described, is the sole active mechanical factor in determining the eruption of the teeth, will it account for the phenomena other theories fail to explain? That the crown of the tooth sometimes travels a distance greater than the length of its root, that teeth sometimes erupt subsequently to the formation of their roots, and that teeth with comparatively little root occasionally erupt are facts all in favor of such hypothesis, and can be explained by it.

The fact that teeth with fully formed roots remain unerupted can be more easily explained by this theory than by any other, because it alone can account for the space obtained for the fully developed roots which often occupy abnormal positions. In other words, the blood-pressure acting as it does equally in all directions makes room for the developing root in the direction of least resistance. Normally this is in the direction of the advancing crown, but occasionally it is elsewhere. The continuous eruption of teeth

with persistent pulps, which neither Delabarre's nor Coleman's theory could possibly explain, is a very simple problem if we admit the blood-pressure as the active mechanical factor.

I am therefore of opinion that upon anatomical and physiological grounds alone are we justified in assuming that *the blood pressure exerted in the vascular tissue which lies between a developing tooth and its bony surroundings is the active mechanical factor in the process known as the eruption of the teeth.*

So far the purely mechanical aspect of the question has been alone considered; but if your patience will endure the strain, there are one or two points of physiological interest that have so direct a bearing upon the subject that it would be as well to include them here.

Some years ago I recorded the observation that, in young people, when a back tooth had lost its antagonists, the characteristic elongation which takes place under those circumstances varied in cases in which the pulps of the unopposing teeth were dead from those in which they were living. In the former instance, although the elongation of the teeth took place, it was unaccompanied by any downgrowth (or, in the case of a lower tooth, upgrowth) of the alveolar ridge; whereas, in the latter case there was a corresponding deepening of the alveolar ridge. In other words, in the case of dead teeth there was simply extrusion from the alveolus, but in the case of living there was growth of the alveolar ridge. It appears obvious, therefore, that the growth of the alveolar process is dependent upon the integrity of the dental pulp; or, in other words, that the pulps of the teeth as a whole exercise a trophic influence with regard to the alveolar process. I am of opinion that extirpation of the pulp of a tooth causes a marked and permanent alteration in the vascular condition of the periodontal membrane; in fact, a disturbance of vasomotor equilibrium in the direction of a paralysis of the vasoconstrictor mechanism.

The foregoing remarks apply to both the permanent and temporary dentitions; but the pulps of the temporary teeth exercise another kind of trophic influence which seems to have escaped the notice of dental writers,—namely, their influence upon the process of resorption of the roots of the temporary teeth. In the case of temporary teeth in which the pulps are destroyed at the time when resorption of the roots should commence, resorption, strictly so-called, does not occur at all. In such cases a certain amount

of absorption of the root, as a rule, takes place, just as it often does in the case of dead permanent teeth, the macroscopic appearance of the roots in both cases being strikingly similar. This absorption is a pathological process, and differs markedly from the physiological process of resorption. It is a much slower process, and that is one reason why we so frequently find the apices of the roots of dead temporary teeth protruding from the labial or buccal surfaces of the alveolar ridges, causing that ulceration of the mucous membrane of the cheeks or lips with which we are so familiar in the case of children whose milk teeth have been neglected.

The explanation of this common phenomenon is simple. The death of the pulp of the temporary tooth has left its root incapable of resorption and its socket prone to degeneration. Absorption is too slow a process to make room for the crown of the permanent successor, which soon impinges upon the dead root, deflects it, and thrusts its apex through the degenerated alveolar process and the superjacent soft tissues. In those cases in which death of the temporary tooth has taken place some time after the process of resorption has commenced, and the root is, in consequence, shortened, the pressure of the advancing permanent tooth simply tilts the root until it takes a nearly horizontal position, the crown, if any remain, being correspondingly deflected. Other phenomena which admit of a similar explanation are familiar to us all, and need not be enumerated.

From the time when the dental pulp is "nothing more than a part of the mesoblastic myxomatous tissue of the jaw, which has become more rich in vessels and cells than the other neighboring part," up to the time when commencing senile degeneration presages the termination of its physiological activity, it is one of the busiest exponents of local government observable in the whole domain of human physiology. While it is hard at work constructing the tooth, it regulates the blood-pressure that causes that organ to travel to its appointed place in the mouth, at the same time building up the bony walls that enable that pressure to act at a mechanical advantage. Then, in the case of the temporary teeth, it superintends the demolition of the very structure it has been at such pains to create; and finally, in the case of the permanent teeth it controls the nutrition of those parts upon the integrity of which the tooth is dependent for the proper exercise of its function.

NOMA, WITH REPORT OF A CASE.

BY ALBERT L. MIDGLEY, D.M.D., PROVIDENCE, R. I.¹

NOMA, a disease of childhood, which is also known as *cancrum oris*, or gangrenous stomatitis, is a destructive, ulcerative condition of the mouth which makes its appearance upon the gum or mucous membrane of the cheek, and, advancing with great rapidity, destroys both soft and hard tissue and usually the life of the patient. It is essentially a secondary disease, and occurs most frequently during convalescence from measles, scarlatina, or other exhausting diseases of infancy. It sometimes arises, however, when these diseases have not been present, although it may be said that it never occurs in healthy children, but that it is almost invariably found in the weak, anæmic, poorly nourished type. It is more commonly found in the female, and appears most frequently in the lower jaw.

The cause of the disease is unknown, but many writers agree that the factors necessary for its appearance are a very low vitality and infection. Some say that it is of bacterial origin, and though many of the lower forms of life have been found, the reports as to their being the cause is a matter of opinion only. One micro-organism which is generally found is Lingard's thread-like bacillus. However, there seems to be no doubt that the disease is of an infectious nature, for several cases occurring in the same family have been reported. The excessive use of mercury favors its occurrence, and occasionally it has been found to follow an ulcerative stomatitis.

The onset of the disease is very insidious, and the most characteristic symptom is a very foul odor. Upon examination may be found an ashy gray ulcer on the mucous membrane of the gum or cheek, or at the angle of the mouth, which soon turns black. The cheek is swollen, tense, and shiny, and the skin, which is red, turns blue, and as the process advances a coal-black slough is left. A livid line marking the boundary of the diseased condition is also very characteristic. Other symptoms are an increased flow of saliva, drooling, coated tongue, diminished appetite, diarrhœa, and high temperature, though it may become subnormal before death.

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Noma.

The process very rarely becomes bilateral; relapses often occur, but the constitutional disturbance is very slight, and the child suffers little or no pain. A spontaneous recovery may take place even though there has been a great destruction of tissue, leaving a frightful deformity and impaired function of the jaws. The duration of the disease is from one to three weeks.

As to the pathology, Starr says that four distinct zones can be distinguished. Surrounding the destroyed tissue there is an infiltrated zone, then an area of increased connective tissue, and outside this is healthy tissue.

The prognosis of this disease is very grave. Seventy to ninety per cent. of the cases are fatal, and many believe that complications make the prognosis absolutely fatal. The child may die from septic pneumonia, diarrhoea, or septicæmia.

The curative treatment of noma lies in an early diagnosis and a prompt and radical operation. Isolation is absolutely necessary, and powerful disinfectants are to be made use of. Many believe in the free use of the Paquelin cautery and touching the parts with nitric acid or ninety-five per cent. carbolic acid. A stimulating tonic should be given, and the mouth should be kept in as hygienic condition as possible. Although the therapeutics cannot be said to have a specific character, chlorate of potash internally and as a mouth-wash is advised. After the operative stage has passed palliative measures only can be resorted to, and by attention to carious teeth and the various forms of stomatitis during convalescence from the exanthemata much can be done in the way of preventive treatment.

I report the following case:

R. K., aged two and a half years; male; seen at St. Vincent's Asylum. The patient presented the following history: His mother died of pulmonary phthisis. A healthy father and brother are still living. There was no history of children's diseases, and the patient had always enjoyed good health up to the present time.

October 1, 1902.—The patient was suffering from a dento-alveolar abscess of the right superior temporary lateral, and on this day I extracted the tooth, using chloride of ethyl as a local anæsthetic. Two days later there appeared at the gingival margin of the socket of the extracted tooth a black necrotic area, a quarter of an inch in diameter, which involved both soft tissue and bone. The skin of the upper lip on the right side was tense and waxy, and a distinct

red discoloration of it marked the boundary of the inflammation. There was also a very foul odor, profuse ptyalism, and drooling. The tissues of the mouth were highly inflamed, and most of the teeth were in a very carious condition.

October 4. — Diagnosis, noma. I operated under chloroform anæsthesia and removed the roots of the superior temporary centrals and remaining lateral, since their crowns had been destroyed by caries. The necrosed tissue was entirely removed and the bone curetted and washed well with warm water and dioxygen. The wound was cauterized with carbolic acid ninety-five per cent. and packed loosely with gauze saturated with xeroform. Syrup of iodide of iron was given as a tonic and a mouth-wash of one per cent. silver nitrate was used every hour. The next day the patient appeared very comfortable, with normal temperature and pulse, and no pain apparently.

The following day, to my surprise, the roof of the mouth, floor of the nose, and half of the right cheek were in a gangrenous condition and beyond the stage of a second operation. From now until death, October 19, palliative measures only were used. The temperature during these days was 102° to 103° F. and the pulse ranged from 120 to 140 per minute. Diarrhœa began the second day after the operation and continued throughout the disease. A specimen was given to the pathologist of the hospital for examination, and he found a thread-like bacillus.

The case is of interest, since the disease immediately followed a dento-alveolar abscess and attacked a strong healthy child. Another important point also to be considered is that two weeks previously a child died from the same disease in this institution.

BIBLIOGRAPHY.

- System of Oral Surgery (Garretson), page 498.
- Treatise on Surgery (Moullin), page 720.
- System of Surgery (Dennis), vol. iii. page 127.
- Medical Record, vol. xii.
- Surgical Diseases of Children (Owen), page 193.
- International Encyclopædia of Surgery, vol. v. page 495; vol. ii. page 308.
- American Text-Book of the Diseases of Children (Starr).
- International Text-Book of Surgery (Warren and Gould), page 230.
- American Text-Book of Surgery, pages 53, 646.
- Treves' Surgery.
- Holt's Surgery.

EXOSTOSIS, WITH LOSS OF TOOTH: A CASE IN PRACTICE.

BY GEORGE T. BAKER, D.D.S., BOSTON, MASS.

IN November, 1897, Miss C., aged thirty-nine, experienced very severe pains in the left superior maxillary region. The pain usually began about six o'clock in the afternoon and lasted until bedtime. While very severe, it was not sufficiently localized to enable her to state exactly where it was, but it seemed to be in the vicinity of the upper left bicuspid or molars. This pain continued every day for two or three weeks. She supposed it to be "neuralgia," and at the end of the third week it disappeared without treatment, and complete immunity was enjoyed until the beginning of August, 1898, a period of about nine months. It then began, more severe than before, generally commencing at bedtime and continuing two or three hours, when patient would sleep and rise in the morning free from pain.

October 1, 1898, she consulted me regarding it, stating the above facts and adding that she was very anxious to save all her teeth, and she hoped that not even one would have to be sacrificed.

On examination, nothing was found in the mouth to account for the unusual condition, except that the upper left second bicuspid contained on its ocluso-distal surface an oxyphosphate filling partially dissolved. The gum of normal appearance was apparently healthy, but this tooth alone seemed to respond somewhat to gentle tapping. Believing that this tooth was the cause of the long-continued disturbance, the partially dissolved filling was removed and the bur carried through the thin layer of dentine directly into the pulp-chamber, with but very little pain and but slight hemorrhage. Suspecting pulp-nodules, arsenic was applied, one-fiftieth of a grain, with an equal quantity of sulphate of morphia and enough campho-phénique to make a thin paste. This was allowed to remain in the tooth for one week, during which time patient experienced no trouble. A broach was then passed to the foramen and a thin ichorous fluid was discharged, but the suspected pulp-nodules were not found.

A few days later the pain again returned, and, hoping to break up a possible pus sac, a drill was passed through gum and process to the end of the root. Thinking that this would give relief, the

patient was dismissed, but next day, reporting no abatement of the pain, the tooth was extracted and very extensive exostosis was found, extending all over the upper half of the root, causing the tooth to appear larger at the apex than at the neck.

There was some discomfort for about twenty-four hours, after which the pain ceased.

Nearly all the other teeth are in position, and no other has been similarly affected up to the present time, now over five years.

In conclusion, attention is called to the salient points of this case, which may possibly be of help in diagnosing other similar cases:

1. Intermittent character of pain, with paroxysms at night and immunity during the day.
 2. Absence of all external indication of trouble, such as swelling, inflammation, or marked sensitiveness to heat or cold.
 3. Inability of patient to localize the pain, even when so severe as to banish sleep.
 4. Crown of affected tooth had been broken away, so that there was no occlusion with lower teeth.
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THE MAKING OF A PORCELAIN FILLING.

BY N. S. JENKINS, D.D.S., DRESDEN, GERMANY.

EVERY step in making a porcelain filling should be taken with scrupulous exactitude.

PREPARING THE CAVITY.

It is indispensable that the cavity should be shaped so that the matrix can be perfectly made and withdrawn without changing its shape in ever so slight a degree. To this we need not hesitate to sacrifice frail walls, especially upon occlusive surfaces, as the crowns of molars and bicuspsids and the palatine walls of superior incisors. In all approximal cavities sufficient space must be gained by wedging or filing. At all occlusal surfaces the walls of the cavity must be at right angles, and thin edges should be avoided so far as possible. All the walls of the cavity should be as nearly at right angles as circumstances permit. Occasionally some decayed dentine can be allowed to remain until the completed filling is ready to be set, if



Exostosis.

its premature removal would necessitate undercuts; but usually every particle of decay can be removed with advantage in the first preparation of the cavity. All the edges should be clearly defined and well polished, that it may be possible to burnish the edges without injury to the matrix. It is well to polish also the interior of the cavity, as a smooth surface facilitates the removal of the matrix.

What instruments should be used to accomplish this perfect preparation of the cavity must depend upon the operator and the case. It is not sufficient for thorough treatment to simply have the cavity well shaped and polished. Every visible portion of the tooth under treatment must be examined, every bit of tartar must be removed, every pit and blemish in the enamel must be made as clean and smooth as practicable, and often the very shape of the tooth must be reduced to an ideal form. Chisels, files, sand-paper disks, drills of all shapes and sizes, corundum wheels, disks, and points, polishing tape, diamond points, Scotch and Arkansas stones, spoon-shaped and other excavators, polishing powder, all serve their purpose according to the case and the feeling of the operator. It is only necessary to insist that, by whatever means may be found practicable, the cavity must be so prepared that it has that form which will make the filling secure; so cleansed that decay and discoloration cannot progress under the filling; so shaped that the matrix can be withdrawn without change; so perfect in edge that an exact joint can be obtained everywhere. This is possible in every cavity, but is sometimes not achieved except by the operator who takes his vocation seriously, and who thinks out every detail of every case as being to him, at that time, the most important thing in the world.

All this preparation is generally best done under the coffer-dam, and in some cases, where there is still room enough, it is well to take the matrix with the rubber dam in position. Ordinarily, however, it is preferable to take the matrix after having removed the dam. In such cases, if there is any bleeding of the gum, it may be stanchd by the application of trichloroacetic acid, a slight touch of the ten per cent. solution being usually sufficient. If blood or serum work underneath, the removal of the matrix is rendered more difficult, but the application of a thin film of vaseline to the edge of the gum and to the cavity seems to be unobjectionable; indeed, it facilitates the fixing of the matrix as well as its removal in all those cases where the cavity cannot be kept absolutely dry. If

complete dryness is possible, the use of vaseline is superfluous; but in that large class of cases where the matrix must be carried over the gum, vaseline is indicated. Bruck uses olive oil instead of vaseline. Any oleaginous substance will probably answer the purpose if intelligently applied.

TAKING THE MATRIX.

There are only two materials available, platinum-foil and gold-foil. Of the former it may be claimed that it is fairly adaptable and resists so high a degree of heat that tolerably refractory substances may be melted in it, even when it has not been embedded. The objections are, that no degree of skill can carry platinum-foil unbroken into very many cavities in obscure positions, that it cannot be burnished exactly over frail edges in numerous cases, nor always be made to conform to the general shape of the tooth where such conformity is desirable, and that its stiffness is so decided as to cause it sometimes to spring just enough to make a perfect joint impossible. None of these objections apply to gold-foil. With a little experience, the skill of any ordinary dentist is sufficient to carry gold-foil unbroken to the bottom of any properly shaped cavity, however obscure, and to burnish exactly over the edges of the cavity, with sufficient margin to give the shape of the tooth when such shape is desired; and the gold may be removed, by the exercise of a little dexterity, without the slightest change, as it possesses a docility which leads it to remain in that form into which it has been pressed. If then embedded in a soft asbestos paste, it remains unchanged during any number of heatings below its melting-point.

To the practised hand gold-foil No. 30 is sufficiently thick for all cavities. It should generally be annealed before using, the exceptions being in very small cavities or in very deep ones of moderate size. In these cases the objection to annealing is, that it renders the foil so cohesive that folds become somewhat intrac-table, and are not so easily reduced by burnishing. In large cavities this condition is less objectionable, and the matrix is made stiffer when worked after annealing, so that its removal without bending is more certain. The gold-foil should be cut of an appropriate shape and large enough to lap well over the edges in all directions, and should be carried first to the deepest part of the cavity with a small piece of amadou or cotton. For this purpose

the ball-pointed tweezers, suggested by Hastings & Keyes, are very useful. After the foil has been pressed by successive pieces of amadou into every part of the cavity, it is well to remove this packing and follow it with disks of chamois skin, after the manner of Elander. Now also the edges should be burnished until everywhere a perfectly smooth margin has been secured. In forming the margins the rubber-capped instruments designed by Bruck are often very efficient, especially in crown and labial or buccal cavities. The packing can then be removed and the matrix gently coaxed out. If the cavity has been well shaped and the matrix properly made, this can always be done, with a little patience, by careful use of a hoe-shaped excavator. It is never necessary to fill the matrix with wax in order to remove it intact.

The gold matrix should always be embedded in a paste of powdered asbestos and water (even a platinum matrix is better managed if embedded), then placed in a platinum or a nickel-platinum cup, which should be exposed to a gentle heat until the paste has been completely dried. It is unnecessary, and usually objectionable, to add plaster or sand to the paste. Asbestos, of which there are many varieties, is a mixed silicate of magnesium and calcium. Care should be taken to select asbestos which, when exposed to the heat of the furnace, shows a sufficient proportion of silica to hold it together in a compact mass with a smooth surface.

SELECTING THE COLOR.

There are two general principles to be considered. In approximal cavities it is better to select a shade slightly lighter than the natural tooth, and in labial and buccal cavities slightly darker. In all other cases it is well to conform to the natural color of the tooth so far as possible. Under all circumstances the color should be selected when the tooth is moist, and not when it has been bleached by dryness under the coffer-dam.

MAKING THE INLAY.

It being granted that the gold matrix is preferable to one of platinum, for the reasons above mentioned, then a body fusing below the melting-point of gold must be selected for the inlay. Among such bodies, that known as the Jenkins Porcelain Enamel, being at the present time the one most commonly approved and adopted, on account of its great strength and density and the

certainty with which it can be melted to an exact line and contoured to desire, is here selected to illustrate the process of making a porcelain inlay. The principles which control the manipulation of this material would, in general, apply to the use of any low-fusing body.

The matrix should be filled with the porcelain enamel powder, which has previously been well moistened with absolute alcohol. The mixing should be done with a perfectly clean spatula on an agate plate, since the powder is so hard that it will scratch and roughen either glass or porcelain plates, taking up undesirable particles and leaving, in time, a surface which cannot be kept clean. Alcohol is to be preferred to water because of cleanliness and ease of manipulation. It evaporates quickly and leaves a fairly solid mass in the matrix. It is well, from the beginning, to pack the powder to conform to the general shape desired in the finished filling.

The fusing is most accurately accomplished with the gas furnace designed for the material under consideration. The cup containing the matrix is held about midway in the furnace and a small flame from the gas-jet turned upon it at the same time with an air-blast from the foot-bellows. Sufficient air to make a blue flame should always be used, that there may be no unconsumed particles of carbon to discolor the furnace and possibly the filling. Slowly the heat should be increased until that point has been reached at which previous experiment has shown that the powder will just barely melt, and at this point it should be held until the desired flow is obtained. This often requires much patience. If the mass of the powder is unusually great, or an excess of asbestos has been used for embedding, one often tries to accelerate the melting process by employing too high a degree of heat. If that is done, the inlay will have an unnecessary degree of porosity. There is no material which cannot be made to boil and bubble by sudden and excessive heat, and when porcelain has been thus treated it is impossible to remelt it into a solid mass.

The great value of the process above described is that every stage can be seen, and the powder be melted each time exactly as is desired, until a practically homogeneous and solid mass is obtained. When the first fusing has been completed the cup can be at once removed from the furnace, the cover taken off, and the bottom of the cup wet with water to facilitate cooling. When cool, the

matrix must be again packed and fused. Four such packings and meltings are necessary to obtain a perfect result. The first three meltings should stop just short of the most complete fusing, but the fourth, which is designed to exactly finish the edges and the contour, should be more thorough, being continued until the desired surface is obtained. In some complicated cases an even greater number of meltings are required, but generally four are sufficient.

When the inlay is completed it is well to let it cool slowly. When quite cool, the gold-foil, which may be wet with water to advantage, is to be removed by gently bending it back from the edges. When carefully done it may be removed in one piece. If any shreds of gold-foil remain sticking to the inlay, they may be removed with an excavator or a bur drill in the dental engine, or by boiling in *aqua regia*. The filling is now placed in the cavity and the fit proved. If hitherto each step has been taken aright, it will fit so exactly that no space can be seen, even with a powerful magnifying glass, between the filling and the cavity. Should there be slight overhanging edges, they may be removed with a sand-paper disk. This requires care and delicacy of touch, so as to remove only that which is superfluous.

The inner surface of the inlay will be found glazed, an undesirable condition for the attachment of cement. Elander and Reeves recommend removing this glaze with hydrofluoric acid. Great care should be exercised in using this powerful agent, which dissolves all metals except lead, gold, and platinum, and attacks all silicates. A drop placed upon the under surface of a porcelain inlay will speedily cause a roughness, intensified if the porcelain has not been solidly melted. The acid must in no case run over the edge. In those rare cases where a desirable depth of the cavity cannot be obtained, and where undercuts cannot therefore be easily made, this method is especially indicated. In most instances, however, the glaze can be removed by the use of a small sand-paper disk, and then it is well to make a few slight undercuts with a small diamond disk. These undercuts can be placed anywhere and add greatly to the security of the filling. Of course, they must be made with discretion, and not be used to weaken the inlay, nor should they be made without having inlay and disk kept cool with water, lest fracture ensue.

SETTING THE INLAY.

The cavity should now, if practicable, be put under the cofferdam, thoroughly dried, and a slight portion of the dentine nearly everywhere removed, so as to leave a very trifling space for the cement. In those cases where the dam cannot be applied, the gum may be touched with trichloroacetic acid and the salivary ducts covered with napkins or absorbent cotton rolls, and the cavity can then be kept dry long enough to set the filling securely. A little oxyphosphate cement should be smeared upon the under surface of the inlay, as well as upon the floor of the cavity, and the filling then be gently but firmly pressed home. The cement must have a consistency appropriate to the case. If the case be a tooth with frail edges and a thin and delicate inlay, or one that is so complicated in shape that unusual care and deliberation must be exercised to put it into place, then the cement must be thinner than for a large cavity with strong edges. Under all circumstances every particle of superfluous cement must be pressed out. This may be done with tape, silk ligatures, wooden points, or any other means which may be indicated. It is important to have every cavity so shaped that there may be no question of where the filling should go and no doubt as to whether it is exactly in place. It should be held firmly in position until the cement has begun to crystalize, and then, when the pressure is relaxed, it is desirable to keep the tooth dry until the cement has well hardened. Dryness makes the tooth appear lighter in shade and, combined with the opacity of the cement, causes a momentary disappointment in color; but if the color has matched the moist tooth before setting, it will in a short time prove satisfactory after setting, when the tooth has had time to resume its normal color.

No other filling, except tin and gold, so increases in stability with advancing time as does porcelain. With each year the cement seems to gain in strength, until at last the filling can be removed only with extreme difficulty.

WHAT PLACE HAS LOW-FUSING PORCELAIN IN DENTISTRY?

BY MR. ROBERT BREWSTER, CHICAGO, ILL.

THE melting-point of fine gold is the adapted dividing line (approximately) between what is known as high- and low-fusing porcelain. Some high-fusing porcelains, however, fuse 400° or 500° above the gold melting-point, whilst some of the low-fusing bodies can only be used safely with a blow-pipe, their melting-point being so low.

It will be remembered by those who have followed the subject that the original claim for low-fusing material was that gold was more easily adapted to cavities than platina, and upon this claim its use was principally urged. There seems of late, however, and more especially since tests were made in Germany with a few of the different porcelains to determine their resistance to crushing, that less importance is placed upon that most important phase of the subject, the value of gold as a matrix, than upon the strength of the porcelain. There must be some good grounds for shifting the issue; but what are they?

It has never been claimed that any of the high-fusing porcelains in general use have shown any deficiency in respect of strength, nor that anything stronger was needed. Supposing, however, that some *one* of the low-fusing bodies was stronger than *all* the high-fusing bodies on the market (which, by the way, is not the case, as my dynamometer tests have shown). That would be but an unimportant advantage as compared with the other requirements of a first-class dental porcelain, not the least of which, among the many essentials, is translucency and life-like appearance. No one who has compared the two classes would venture to claim a superiority in this respect for the low-fusing material.

Another equally important quality is that of baking flat; that is, whilst completely filling a matrix to the margins, retain the proper contour and not ball up towards the centre.

Another very necessary quality is that of holding up sharp cusps and approximal extensions under repeated firing. How frequently it happens that judgment on the exact fulness of contour is at fault, and it becomes necessary to add further material. This is a comparatively easy task with a body which will fuse to a glaze

and yet hold its form intact, but is extremely difficult with a material which, the moment it glazes, begins to change form.

A recent illustration of this decided tendency in all very low-fusing porcelains to become spheroidal, was made evident at the Odontographic Clinic held February 13, 1903, when Dr. Ottolengui (one of the most expert manipulators of the Jenkins material) challenged any Western man to burnish platina matrices and make inlays in high-fusing porcelain for the cavities he had prepared, one of which was a distal approximal in a canine, involving the whole of the cutting edge; the other, the whole grinding surface of a molar. The challenge was taken up by Dr. Reeves, of Chicago, with the result that the inlays made by Dr. Reeves with the Brewster high-fusing porcelain were pronounced by the committee of four experts to be perfect in fit and contour, whereas those made by Dr. Ottolengui with the Jenkins material did not fit.

This incident very forcibly emphasizes the difficulty experienced even by an expert, in obtaining perfect fitting inlays with material so susceptible to heat.

The subject of fusibility was duly considered in the experiments carried out several years ago by some of the Chicago dentists and myself, when determining a formula for a reliable porcelain adapted to all classes of porcelain work, and no porcelain fusing below gold was found adequate. The result of six years' steady work, observation, and experience on the part of the profession with porcelain of the formulæ then adopted has been but to confirm the correctness of the view held at the time.

Whilst, however, the use of gold for matrices is being advocated by a few prominent men in different parts of the country, and whilst there is such a great diversity of opinion upon the subject, there will, naturally, be a desire on the part of many to investigate for themselves. As a consequence, I was asked some time since if I could not make a porcelain that would fuse upon gold and yet retain some of the characteristics of high-fusing porcelain.

Acceding to this request involved quite a long series of experiments, which, I am glad to say, have ended satisfactorily to all concerned. The departure from old lines has been radical. It would have been an easy matter to have taken my enamel body, and by treating with fluxes produced a material which, immediately upon reaching a heat sufficient to fully glaze it, would lose its form, thus requiring some special design of blow-pipe or other apparatus to handle it.

This would have been a retrograde step, not only for the important reason given, but because there would have been lessened translucency in a marked degree; in fact, I should only have produced a duplicate of the low-fusing bodies already in the hands of the profession.

The result of my experiments on entirely new lines has been to produce what is termed a "gold matrix porcelain," having all the appearances, when fused, of high-fusing material, having very considerable strength, holding up well under fire, allowing quite a margin of heat increase without change of form, an entire absence of bubbling, and a translucency not before obtained in a material fusing at so low a temperature (about the melting-point of 14-carat gold solder).

So that, whilst conceding that the bulk of opinion in this country is in favor of platina for matrices, owing doubtless, to the trend of education having been in that direction, the opportunity is now given to every one to test the question for themselves, at very nominal expense, and without any change in their present baking appliances, thus enabling them to add to the knowledge of the subject from practical experience, and be in a position to answer the question asked at the beginning of this paper.

THE POSSIBILITIES OF THE TOOTH-BRUSH.¹

BY DR. B. F. ARRINGTON, GOLDSBORO, N. C.

As a health-preserving factor (preservative and restorative) there possibly is no one agent, implement, or medicinal remedy in the catalogue of remedies recorded in materia medica, nor any one or one hundred of the numerous patent and proprietary remedies with which the country is at present so mercilessly supplied, that can be used to such beneficial advantage for prevention of disease and for the preservation of teeth and gums as the tooth-brush, if carefully and systematically applied several times daily from early childhood to mature and advanced age. A simple, easy practice, requiring not more than three or four minutes daily, and not half

¹ Read at the annual meeting of the Alumni Clinic, Nashville, Tenn.

so troublesome or taxing as the washing of face and hands, combing hair, or caring for finger-nails.

Had such practice been introduced and generally indulged, commencing as far back as seventy-five years ago, there would have been no necessity for the establishment of a dental college in this country, and in all probability there would have been none, whereas to-day we have fifty or more and others in prospect. A greater number than was ever dreamed of by Hayden and Harris, the original instigators and organizers of the Baltimore Dental College, the first and oldest in existence, and which dates back less than sixty-five years. If the views and arguments of those level-headed, practical men had been respected and their earnest pleadings for the establishing of a chair of Oral Surgery in medical colleges been heeded, what a blessing in all probability would have come to the human family! Mouths comparatively free from taint, healthy gums, and well-preserved teeth would to-day be the result and rule and not the exception. As it is, this, the second day of February, 1903, with many dental colleges, a National Dental Association, with innumerable Dental Societies in States and cities discussing ways and means for best results from practice, there is not one mouth in fifty to be found that can be pronounced healthy; teeth decay and are extracted by thousands when one should not be; and disease of teeth and gums prevail and continue unabated with rare exception, as before dental colleges were established,—a regrettable and deplorable state of things. What is the cause and what is the remedy? Filthy mouths through neglect of proper instruction and free use of tooth-brush is unquestionably the chief cause, and the free use of the brush with plenty of water is the preventive remedy for relief. There are other causes for diseased conditions of teeth and gums, and for the loss of teeth, but of much less magnitude. The neglect of use of tooth-brush is the chief cause of unhealthy mouths, foul breath, and loss of teeth, and for much of the conspicuous, objectionable display of gold in mouths at this advanced period of dental practice, such as display advertising fillings and gold crowns on front teeth, a popular and much indulged practice at present and for some years past, and has brought reproach and shame upon the profession, with hurtful results. Less gold and more tooth-brush would be better for the profession and for the public.

Our country, from Maine to Mexico and from ocean to ocean,

is flooded with germ-destroying (so termed) mouth-washes, creams, soaps, etc., to kill bacteria, to preserve teeth from decay, and to keep the gums in a healthy condition, and so far not one is definitely known to be reliable and will accomplish when used the results proclaimed. No remedy yet offered is of sufficient strength to kill a microbe and prove harmless to the soft tissues of the mouth, yet the money goes for the highly endorsed and lauded remedies, and they are most extravagantly and unreasonably used, when a judicious use of the tooth-brush and water in quantity would more effectively dislodge and expel from the mouth any hurtful excess of germ products and do no injury whatever to the soft tissues and nerve tone.

If the one-hundredth part of the time, talent, and money invested in the production and introduction of useless mouth-washes and other preparations designed for the destruction and check of germ detriment in the mouth had been given to improvement in the patterns and make of tooth-brushes, suited to the wants of all classes in a community, with practical instruction when and how to use them, a thousand-fold more good would have been accomplished in the interest of healthy mouths and strengthened constitutions, with infinitely less labor and fatigue to dentists, and at less cost with better results to patrons.

Many persons who use freely of the numerous remedies on the market for mouth treatment preserve and keep their gums and teeth in a favorable condition, but the same result with these persons could be as effectually accomplished by the simple application of tooth-brush and water as above suggested. To be convinced is to make the experiment and watch results. The results will be satisfactory, and the use of the tooth-brush and water without medicated mouth-washes and other preparations will grow in favor daily. It is the tooth-brush that does the good, removes hurtful impactions of unwholesome environments from the teeth, keeps the gums in a healthy condition, the teeth exempt from excess of caries, and the tongue freed of germ-breeding accumulations and bad odors, and makes easy for expulsion by force of water all objectional débris with dislodged bacteria.

If there is an antitoxin that will weaken and prevent germ influence for evil in the mouth without risk of injury to the soft tissues, it is the tooth-brush.

According to papers published in dental journals, based upon

the theories and teachings of scientists and distinguished dentists and physicians, not only in this country but abroad, the mouth is the natural incubator for most all germ products that do injury to the human system, and it is a non-disputed fact that no germ-destroying remedy for mouth use of sufficient strength to counteract germ effect for evil in the mouth without injury to the soft tissues has yet been produced; therefore the majority of the many remedies offered are worthless and should be discarded, and for the result desired rely upon the tooth-brush and water.

To check the ravages of disease in the mouth, caries of teeth, diseased gums, periodontal membrane, waste of alveolar process, loosening and loss of teeth, the effect of local causes, mostly unhealthy environments, we must resort to and rely chiefly upon the frequent, systematic use of the tooth-brush. It is, of all remedies, the most effectual and trustworthy.

Tooth-brushes of practical pattern and varied quality, with prices regulated to meet the wants of all classes, poor and rich, young and old alike, is now more greatly needed than continuation and increase of drugs for mouth use.

As practical evidence of the beneficial influence as a disease preventive and health-preserving factor the tooth-brush has, when systematically used, mention of the fact is made that in cities and towns where dentists prevail and have supervision and care of children's teeth from early childhood to maturer years, and instruct in the use of the tooth-brush, the frequency of caries in teeth and diseased gums is greatly diminished, and never advance with destructive tendency as with children of the same age in rural districts where there are no local dentists and children's teeth are neglected; and so it is in relation to Rigg's disease (pyorrhœa alveolaris) so called. In cities and towns, also in the country with persons who make daily use of the tooth-brush and are systematic in the care of their teeth and gums, the disease is but seldom seen, and never in a far-advanced typical state.

Another fact sustaining the advocacy for frequent use of the tooth-brush is that after treatment and cure of the disease above named, if the tooth-brush and plenty of water is used several times daily there will be no return of the disease. Experience in practice and observation of results long years after treatment justifies the assertion.

A proper use of the tooth-brush will, commencing with early

childhood, preserve and hold intact the temporary teeth, free from rapid and destructive decay and necessity for extraction, and in youth and adult years excessive decay requiring large fillings and crowning would but seldom if ever occur, and plates and bridges would be so little needed that the execution of such work would pass from the hands of the general practitioner into the more skilful hands of prosthetic specialists.

With increased and intelligent use of the tooth-brush, not only would the teeth and gums be preserved in a comparatively normal state, with breath preserved free from taint, but the general health would doubtless be better preserved.

It is now conceded, I believe, that it is only the excess of germ products nourished in the mouth that does harm, destroys teeth, produces unhealthy gums, periodontal membrane, and causes waste of alveolar process, loosening and loss of teeth, and in various ways weakens the constitution and shortens life. With the acceptance of such theory with facts recorded, the question very naturally arises, How are the hurtful and destructive effects to be most successfully battled with, and the harmful results checked and counteracted? Considering the failure in results from past treatment with varied mouth-washes for germ destruction, would it not be reasonable and advisable to test thoroughly the true merits and worth of the tooth-brush? Dentists must take the subject under consideration and decide for good or evil. We must weigh the subject carefully from a reasonable, practical stand-point, and make choice for the better prevention and check of disease, and for the healthful preservation of teeth and gums and the general good of the human system.

The tooth-brush is unquestionably our best and most effective prophylactic agent, and prophylactic treatment for preservation of teeth and gums is the all-important subject (in all sections) before the profession to-day, and should be the absorbing thought with all dentists until all are agreed that change in practice is requisite for better results. I have given much thought to the subject, and am free to say, in my humble judgment, that the tooth-brush is the essential prerequisite for success and universal good results in effort for preservation of teeth and gums in a condition as near normal as possible.

The following extracts from various journals are convincing and proof evident of the importance and necessity for more general and frequent use of the tooth-brush as a prophylactic agent in dental practice.

In a paper by Dr. W. H. Dalamoret, published in the *Medical Record*, it is shown how injurious an effect upon the health of the child might be produced by the septic condition of the mouth induced by caries of a deciduous set of teeth. Among other conditions he mentions "ulcerative stomatitis, necrosis of bone, enlarged lymphatic glands, which later might become the seat of tuberculous growth, by which the whole system might be infected." He also traced much gastric disturbance to the same cause. Then he insisted on the important part played by the first teeth in regard to the growth of the child, and he concluded that "the mastication of food could not be interfered with by the decay and extraction of deciduous teeth without impairing the health of the child."

In a paper entitled "Unclean Dentists," published in the *Medical Mirror*, we find it stated, "That there are more than one hundred individual germs of bacteria in the average mouth even in health is suggestive. But when we realize that the people who call upon dentists usually have diseased mouths, the possibilities of infection are almost appalling. Physicians should make the public familiar with the fact that the mouth is the port of entry for most infectious diseases, including diphtheria, scarlet fever, and consumption, and other even more dangerous specific diseases have been disseminated and carried from one to another through the medium of dental manipulations."

The dangers from unclean tongues and mouths and mouths containing decayed teeth are graphically set forth by Dr. Miller. He says, "From a neglected mouth, such as repeatedly comes under the observation of dentists, enormous quantities of bacteria must reach the intestinal tract." He has also said, "Out of the seven nutrient media for bacteria in the oral cavity, five are always present on a coated tongue." In the *Dental Cosmos*, January, 1903, he says, "It is a well-known fact, apart from the many local diseases of the mouth and teeth and their various sequences, the oral cavity serves as the port of entry for bacteria of a long list of the most fatal diseases to which the body is subject. I need only refer to tuberculosis, pneumonia, cholera, typhus, etc."

The consensus of opinion of many investigators seems to be that the coatings of the tongue are local and that the mass contains large quantities of bacteria.

Another writer has said, "With decayed teeth and diseased gums to breed bacteria in great numbers, the dorsum of the tongue still

presents the largest surface for their growth, and if not cleaned once or twice daily it is one of the greatest of all places in the mouth for breeding bacteria."

In a very conservative and interesting paper, Dr. J. D. Patterson says, "It may be stated at the outset that the large majority of the most destructive dental diseases at their inception result from an unsanitary condition of the oral cavity."

Dr. J. R. Lessonon, in the *New York Medical Journal*, says, "Hundreds and thousands of people are going about with rotten teeth, carrying with them so many cesspools in their mouths, filled with fetid abominations of stinking food débris with its teeming population of micro-organisms, and the resulting toxins as concomitants, and daily swallowing these putrefactions and absorbing the pus. Many cases of septic disease are due to dental caries and to that alone. Teeth should be cleaned twice a day and always the last thing at night. A tooth-brush should be considered as a conglomeration of toothpicks, and used accordingly."

With such an array of facts and evidence of the unhealthy neglected condition of mouths, with evil results following, the necessity for greater care and cleanliness of the teeth and tongue for the prevention of disease and for the preservation of health, it must be plain to the feeblest minds for perception that the daily, frequent use of the tooth-brush is the important and essential factor for prevention in dental practice.

Dr. D. D. Smith is working on the right line (slightly extreme), and great good must come of his prophylaxis theory and teaching. He has entered the wedge that must split asunder and help to check the false practice of to-day, and cause reform in practice that will be accepted, and will be lauded as a grand feature in practice by the profession and the public. The ball is in motion, and impetus must be given it. Let all lend a helping hand and encourage the new feature in practice that must and will grow in favor daily. Work on right lines, if persevered in, will never prove a failure.

The pivotal point in dental practice has been reached; wonderful features in progress and results have been accomplished, far in advance of the most sanguine expectations and anticipations of dentists who were practising forty years ago.

The highest order of excellence attainable in manipulative skill in the design and execution of prosthetic work and in operations on the natural teeth has been accomplished. The thing now important

to be done as the crowning feature of scientific skill in dental practice is to retrace steps, go back to the beginning, and commence practically on a conservative line of procedure with the tooth-brush and other suitable prophylactic means, and see what we as a profession can do to prevent and check ravages of decay of teeth, disease of gums, peridental membrane, waste of alveolar process, and loss of teeth, with a view thereby to do away with necessity for excessive treatment of gums and extreme operations of patch-up and restorative work in the mouth that is now so generally daily indulged, with no abatement of caries or disease of soft tissues.

We should, as members of the dental profession, write, talk, and reason together, with a laudable single object in view,—the best line of practical, conservative preventive practice for the general good and benefit of our patrons and the public, and for professional advancement, harmonize and work to secure healthy mouths, well-preserved teeth and gums, and pure breath,—unquestionably a possibility if right instruction is given and the tooth-brush is more freely used. The experiment should be made, and there is no better time to begin than now. Let us, if possible, execute professional work on higher, nobler, more reasonable and correct lines of practice until the practice of dentistry in its broadest acceptation shall be strictly conservative and scientific, and prove in the future truly a blessing simplified compared to present practice. To make the effort is our duty, and, if faithfully made, much if not all that is desired can be accomplished by increased daily use of the tooth-brush, which must be regarded as one of our chief factors for good results in an effort for preservation of teeth, and for prevention of disease.

PULP HYPERTROPHY OF THE TEETH.¹

BY PRIVATDOCENT DR. VON RÖMER, STRASSBURG, GERMANY.

I WAS first led to the histologic examination of pulp hypertrophy by the desire to find the conditions of the nerve-supply in this so highly altered pathologic tissue. In the study of the nerves I found not only what I expected, partly complete absence of nerves

¹ Abstract of a paper read before the American Medical Association, Section on Stomatology, New Orleans, May 5 to 8, 1903.

and partly marked decrease of nerve-fibres, thus explaining the great difference of sensitiveness, but also some other very interesting discoveries which I believe are new.

Pulp hypertrophy is to be considered as a new tissue formation due to chronic pulpitis from exposure through more or less complete destruction of the overlying protective tissues. This new growth consists of a comparatively coarse granulation tissue in which three layers can be distinguished. The outer layer consists of a thick stratum of white blood- or pus-corpuscles beginning to break down, then follows a somewhat wider zone consisting of a proliferation of endothelial cells and capillary vessels, which, seen with a less magnifying power, has almost the appearance of granular layer, similar to that before described in the so-called endothelial granuloma of the dental root. The third layer, which forms the chief mass of the tumor, consists of a coarse connective tissue with dilated blood-vessels interspersed with crowded round cells.

Up to the present I have studied about thirty different specimens, mostly obtained in clinics, but for part of which I have to thank my colleagues. I have prepared them in the following manner: First, the whole tooth with the pulp *in situ* in a ten per cent. formalin solution, then decalcified it in a thirty-three and one-third per cent. formic acid solution (which is, as a rule, accomplished in two or three weeks), then divided the tooth, together with the hypertrophied pulp, into two nearly equal halves. Of the halves, such as seemed most suited for further treatment for microscopic examination was taken. These were embedded in celloidin and cut with the microtome into the thinnest possible layers and then stained with alum, hæmatoxylin, and picrofuchsin (Van Gieson), and part with Weigert's medullary staining process, in which the nerves and their medullary layers appear as dark, blue-colored fibres on a yellowish background. This shows that in so-called pulp hypertrophy (which arises like a fungus from the pulp-chamber and generally fills the carious part crown of the tooth) nerve-fibres are absent. In the pulp-cavity itself and in the root-canals, on the other hand, numerous nerve-bundles are found according to the degree of degeneration of the pulp-tissue. This degeneration consists in a transformation into granulation tissue, particularly where infiltration with round cells changes into granulation. The nerve-fibres are already broken down or beginning to be degenerated, as shown by distortions, interruptions, and knot-

formed swellings of the nerve-fibres. Such degenerative processes of the nerves can best be seen in pulps which have been laid bare by fracture in attempts at extraction, and in which the superficies of the exposed pulp is changed into granulation tissue and pulp hypertrophy.

The study of preparations stained by the Van Gieson method has convinced me that the difference claimed by Rothmund and Arkövy between pulp hypertrophy and pulpitis chronica hypertrophica granulomatosa does not exist. By the pulpitis chronica hypertrophica granulomatosa is understood (according to Rothmund and Arkövy; compare Scheff's Handbuch, Band ii. Seite 297) a granulating mass of the pulp from the size of a millet-seed to a pea, soft, with little consistency, and extending over one or two pulp-points. The hypertrophy, on the other hand, which Arkövy calls pulpitis chronica sarcomatosa is a compact, dense neoplasm caused by proliferation of the pulp-tissue, distinctly limited, generally smooth, and only here and there slightly lobular, less vascular, extending over the whole pulp-cavity, except perhaps some very slight portion including the whole crown cavity of the tooth.

I find neither clinically nor histologically any noticeable difference in the two forms. Both forms of hypertrophic pulpitis differ only in their size, and agree perfectly in their histologic structure. The fleshy, round bean or hazel-nut pulp hypertrophy develops simply through its natural growth from the minute millet-seed or pea-sized neoplasm. In both cases there is a degeneration of pulp-tissue and transformation into a more or less coarse granulation tissue, which consists of connective tissue fibres with numerous blood-vessels, round cells, and proliferated endothelium and connective-tissue cells.

The striking point in all the specimens is the richness of blood-supply. The vessels are not only numerous, but also dilated, almost like a hæmangioma, so that after extraction of the tooth the hypertrophy loses half its volume.

In almost all cases of pulp hypertrophy there is found to some extent the formation of partly attached, partly free pulp-stones and calcareous deposits. This is in itself not astonishing, since in nearly all teeth which suffer from any kind of pulpitis, calcic formations are present to the discomfiture of the investigator, and even in well-decalcified preparations they often cause inconvenient nicking of the microtome knife. But what is here remarkable is the

fact that in many hypertrophied pulps such calcareous formations occur well above the pulp-chamber and the hypertrophy itself. These calcareous masses or pulp-stones are in part round or oval, with distinct stratifications and partly irregularly dentate, and show cell inclusions similar to those which are found in the formation of secondary dentine inside the pulp-chamber.

How can these things be explained? I believe the pulp hypertrophy only occurs in teeth, the pulp elements of which possess great vital energy and capacity for regeneration and in which they can oppose special resistance against incoming bacteria and other morbid influences.

The formation of secondary dentine partly attached to the walls and partly free is to be considered an attempt at defence from external injury. The quicker the pulp is compelled to form secondary dentine, the more irregular will be its formation, so the calcification does not follow regular rules and the dentine is not laid down in regular layers, but the pulp-cells are included in rapidly formed irregular dentine structure. Such pulp-cells, so over-energetic in dentine formation, may, here and there, extend with the granulation tissue beyond the pulp-chamber itself, and thus, far away from their original site, form on the crown of the hypertrophy such pulp-stones as are shown in some of my specimens.

Some things shown appear at first rather difficult to explain. Thus, in one case the surface is covered with regular stratified epithelium instead of the usual round cells and pus-corpuscles, also with the high papillæ which are typical of the gum tissue. How does this epithelium develop on the pulp? Usually the excised fragment of a pulp hypertrophy is readily distinguished from a corresponding fragment of an alveolar growth by the absence of epithelium. I explain the process as follows: Hypertrophied pulps are frequently ingrafted with alveolar growths; that is, when a pulp hypertrophy extends outside a pulp-chamber over the corroded wall of the crown in contact with the gum tissue. Both are easily injured in chewing, so that spontaneous auto-transplantation from the gum tissue to the pulp hypertrophy occurs. Six months after preparing the one specimen I found another which demonstrated conclusively the truth of this conjecture. I have seen gum tissue grown over the completely destroyed crown of the tooth of which one was united with the broad surface of the pulp hypertrophy in the pulp-chamber. The whole surface of this hypertrophy was

already covered with epithelium of the same composition and height of papillæ as that possessed by the alveolar tissue. Later I had the opportunity to separate the gum overgrowth from the pulp and there remained then only the pulp hypertrophy covered with epithelium.

In conclusion, a few words on the therapy of pulp hypertrophies. In cases where the pulp has one of these growths (they are vascular and at the same time poorly innervated), they may be either simply amputated with a pair of fine scissors or pointed knife in the depth of the pulp-chamber and then arsenic paste applied to cause necrosis of the root-pulp, or the arsenic paste can be applied direct to the crown of the hypertrophy in order to destroy by necrosis the entire tissue. But there is no serious error, in my opinion, in avoiding the use of arsenic altogether, but simply cut off the top of the hypertrophy and cap the stump.

[REMARKS.—If the author of this interesting paper will refer to page 857, "American System of Dentistry," he will find there that Dr. G. V. Black gave, in 1886, much of the supposed "new" views embodied in the foregoing article.—ED.]

NOTES ON PULP TECHNIQUE.¹

BY MARTHA ANDERSON, M.D.

THE comparative value of methods and stains used for nerve-tissue in other parts of the body have never (to my knowledge) been demonstrated on the pulps of the teeth. Our studies for the past four years has been along this line. While this work has not been complete, yet we are able to show some results. I herewith submit the results of my investigations of the past year.

In the work of preparing pulps for the demonstration of nerve-tissue the following methods of procedure have been carried out.

Fresh pulps have been hardened in a weak solution of formalin, in Müller's fluid, Erliki's fluid, and in Weigert's chrome alum solution, which formula is as follows:

¹ Abstract of a paper read before the American Medical Association, Section on Stomatology, New Orleans, La., May 5 to 8, 1903.

Chrome alum, two and one-half per cent.

Copper acetate (neutral), five per cent.

Acetic acid, five per cent.

Formalin, two to four per cent.

Dissolve the alum in the necessary water, add acetic acid, then copper acetate. Filter, and when cold add formalin.

Sections were cut by the freezing method, then stained by one of the following methods:

(a) Weigert's method for medullated nerves:

Copper acetate neutral sat. aq. sol. + aq. dest., 33° (warm) 24 hours.

Wash.

Weigert's hæmatoxylin, 24 to 48 hours.

Weigert's differentiating sol., few minutes.

Wash.

Dehydrate clear and mount in balsam.

(b) Osmic acid and hæmatoxylin:

OsO₄, one per cent., ½ to 1 hour (dark).

Wash.

Pyrogallie acid, five per cent., 3 to 4 minutes.

Wash.

K. permanganate, one-fourth per cent., 3 to 4 minutes.

Wash.

Oxalic acid, one per cent., ½ minute.

Wash.

Counterstain in hæmatoxylin.

Wash, dehydrate, clear, and mount.

(c) Mummery's iron and tannin:

Wash sections in distilled water.

Liquor ferri perchlor. B. P., 24 hours.

Wash quickly in distilled water.

Tannic acid, gr. ii to ʒiiss, 5 to 10 minutes.

Wash, dehydrate, clear, and mount.

(d) Iron and hæmatoxylin:

Zenker's fluid.

Wash.

Mordant, liquor ferri chlor., 24 hours.

Wash thoroughly.

Hæmatoxylin, one-half to one per cent. aq.

Wash well.

Decolorize weak mordant till pale straw.

Wash thoroughly (or will fade).

Dehydrate, clear, and mount.

(e) Freud's gold:

Wash water.

AuCl₃, one per cent., 3 to 5 hours (dark).

Wash.

Caustic soda, 1 to 5 or 6 water, 3 minutes dark.

Drain.

K. I., ten to twelve per cent., 5 to 15 minutes.

Wash, dehydrate, clear, and mount.

(f) Underwood's gold:

Wash in Na. bicarb. sol., gr. v to $\frac{3}{4}$ i.

SuCl₃ neutralized by Na. bicarb. sol. gtt. by gtt., $\frac{1}{2}$ to 1 hour dark.

Wash dist. water.

Formic acid, one per cent., warm and keep rather hot till crimson,
 $\frac{1}{2}$ to 1 hour dark.

Dist. water, cold, $\frac{1}{2}$ hour.

Dry.

Mount in glycerin jelly.

Avoid Canada balsam.

(g) Lemon-juice and gold:

Lemon-juice strained several times through flannel 10 to 15 minutes.

AuCl₃, one per cent. (dark), 1 hour.

Wash rapidly.

Formic acid, twenty-five per cent. (dark), 24 hours.

Transfer to glycerin and mount in glycerin.

Weigert's stain for medullated nerves was used on tissues hardened in Müller's fluid, formalin, and Weigert's chrome alum, and good results were obtained with both Müller's and formalin hardened tissues, the medullated sheaths of the nerves taking the stain.

The osmic acid method was used similarly to the above, and gave good results following Weigert's chrome alum solution.

Mummery's iron and tannin used after Müller's fluid stained the nerve-fibres, but the results were not so good as with the two previous stains. Mr. Howard Mummery, however, has been able by this stain to trace fine nerve-fibres from the nerve-bundles.

Iron and hæmatoxylin gave good results, the fibres in some places being traced to the apex of the pulp.

Of the different gold methods, Freud's has given me the best results, although some of the results of staining tissues hardened by all the methods have been good. Gold staining on the whole has

been unsatisfactory. The staining has been unreliable. In carrying a number of sections through together by the same process, some will be acted upon by the stain, showing a good result; others will be unaffected.

With certain of the nerve-stains, the pulp-stones have taken the same stain as the nerve-tissues. The osmic acid method is an exception, the stain reacting differently upon the stones.

ADDRESS OF THE CHAIRMAN OF THE SECTION ON STOMATOLOGY, AMERICAN MEDICAL ASSOCIATION.¹

BY M. L. RHEIN, M.D., D.D.S., NEW YORK CITY.

IN officially opening the meeting of the Section on Stomatology, I desire to tender to the members my high appreciation of the honor conferred in asking me to preside over your deliberations. It has been the aim of our Section to encourage the membership of men who are deeply interested in the scientific advancement of this specialty of medicine. On this account our numerical strength has not been great, and I trust that the members will be prompt in attendance at the opening of all the sessions, so that the magnificent programme prepared for us by our worthy secretary will receive the attention and discussion which it merits.

It is unnecessary for me to take up your time with a summary of the scientific work of the year. It speaks for itself in our professional literature with which you are familiar. Our daily occupation as stomatologists includes the treatment of diseases of the oral cavity, primarily with a view to the preservation in a state of health of the teeth, on account of the great value they bear to the health of the general body. The art and handicraft of dentistry has taught us how to cope with dental caries successfully, so that no person in the civilized world at the present day need lose a single tooth from this cause alone.

Many people, however willing they may be to employ our services, are constantly losing teeth in consequence of various patho-

¹ Abstract of Address delivered before the Section on Stomatology, American Medical Association, at New Orleans, May 5, 1903.

logical disturbances of the peridental tissues. The symposiums held in past years by this Section on interstitial gingivitis, pyorrhœa alveolaris, etc., indicate how well we recognize the increasing number of teeth lost by this means. When this lack of inherent vitality of the tooth's periosteum has reached a certain stage, where not only seven-eighths of the root surfaces are covered by nodular secretions, but retrograde metamorphosis in its peculiar way is working towards sepsis and the destruction of cell tissue, we realize that such affected teeth are beyond human intervention. We also know that these very teeth, doomed to be lost as they are when too little vital connection is left, could have been preserved indefinitely if proper hygienic care and treatment had been instituted at the right time and kept up in a systematic way at regular intervals.

Preventive medicine, with its accompanying benefits, has been well understood since the time that Jenner proclaimed the virtues of vaccination. Since then prophylaxis has invaded the domain of nearly every disease, and its science and practice is daily increasing and its field of usefulness becoming better known.

Its value in the province of stomatology is well known to the poorest dentist in the land. The cleansing and polishing of every portion of exposed tooth surface, at regular intervals, in such a way as to preserve the tone and health of the contiguous capillary circulation will indefinitely preserve the life and stability of the human teeth. With a full knowledge of the inestimable value resulting from such systematic treatment, it is painful to admit that, as a rule, the general public get absolutely no benefit from the knowledge of the profession on this subject.

Like many other virtues, prophylactic treatment of the teeth is well understood by all dentists and practised by only a few stomatologists. It is scarcely necessary for me to attempt to draw a pen-picture of what the dentist does under the pretence of cleaning teeth when requested to perform this service, or to speak of the wilful neglect thereof by the majority when no especial demand is made by the patient. You have all examined the mouths of such patients, who inform you that for years their mouths have had the constant care of Dr. X, and he has cleaned their teeth every year. You have found secretions of years deposited on the roots. The more posterior and inaccessible the teeth, the greater the extent of deposits. You are not surprised at finding such teeth becoming

loose, with a surrounding pericementum more or less inflamed, and corresponding loss of soft tissue from superficial necrosis.

They come to us in all stages of tissue loss, from those easily cured to those irretrievably lost. You can not fail to recognize the picture, neither can you fail to place the responsibility for this wholesale destruction of human teeth upon the dentist, who has failed to apply the principles of preventive medicine.

Are we to assume from a study of this sad picture that our calling is made up of men lacking in character and principle? Most emphatically no; in no specialty will be found men with higher attributes of character, in every sense of the word, than in this of ours.

There are very good reasons why this most important duty to our patients is seriously neglected. The necessity for performing the operations immediately necessary for the repair of existing lesions in tooth-structure and adjacent tissue is of paramount importance. They are more than sufficient to take up all the time of the man with an average practice. The difficulty of receiving commensurate pay for the hours of time required in faithfully carrying out the treatment by prophylaxis brings up the question of expediency. It is true that Dr. Smith, of Philadelphia, claims to personally give his patients this treatment at regular intervals. If an effort were made to follow out this method in an average practice, there would be time left for nothing else. It certainly is the consensus of professional opinion, that the busy practitioner cannot give up his valuable time for this tedious, monotonous, and irksome labor, however important it may be for the salvation of the human teeth. A small number of us have tried to solve this important problem by employing an assistant practitioner to attend to this department. In the judgment of your chairman, who has tried this method for twelve years, it has failed to satisfactorily solve the problem.

The employment, in a private office, of a graduate to make a specialty of this work is very likely the best remedy we have had at our disposal up to the present time. The greatest objection to the plan is the inability to retain a graduate possessing ordinary ambition and talent a very great length of time in this position. It is impossible to obtain satisfactory results in this treatment if it is necessary every year or two to place a new assistant in this department. The patients object to these changes, and cannot

fail to contrast the work of the new assistant, who has to be freshly taught the character of the work desired, with the final work of the last assistant, which has become well-nigh faultless from a couple of years of constant practice. In discussing this subject with prominent men it has been generally conceded that far better results could be obtained if suitable female assistants, not graduates, were especially trained and employed for this work.

In some of the States the examining boards have threatened prosecution for infraction of the dental law if such a course be pursued; consequently it has not been adopted, much to the loss of the general public.

This brings up the question whether the cleansing and polishing of the teeth, massaging the gums, and the application of remedial agents by non-graduate assistants, under specific prescriptions and directions of the attending stomatologists, are infractions of the law.

It might as well be said that the administration of drugs hypodermatically, the introduction of sounds and catheters, lavage and enemata, the dressing of wounds, and numerous other services performed under medical direction by trained nurses are all infractions of the medical law. Take away the trained nurses from the physician and surgeon and it would be apparent at a glance how it would interfere with the number of his cases, to say nothing of the inferiority of the resulting attention, which is such an important adjunct whenever the nurse is in attendance.

If this correctly describes existing conditions, it follows as a natural conclusion that the problem of how to systematically carry out the prescriptions of dental prophylaxis would be easily solved by the introduction of the trained dental nurse.

In the State of New York, during the present session of the Legislature, a law is being passed placing the trained nurse under the jurisdiction of the State Board of Regents, which necessitates that they should possess the proper qualifications in education and practice. In view of the high esteem held for the work of the trained nurse, it appears remarkable that the sphere of her usefulness has not long since been extended to our own specialty.

It would be an easy matter to add to the training-schools for nurses a department of dental nurses. Applicants for admission to such a course should be required to pass a satisfactory preliminary examination. Outside of the general didactic instruction which

they would receive, they should obtain additional instruction in regard to the oral cavity, etc., from a stomatological member of the school's faculty. They would also receive their manual training under the same supervision, and in the hospital material they would find ample opportunity for perfecting their working technique.

It is difficult to estimate in advance how much benefit would accrue to a large percentage of hospital cases if their mouths could be properly cleansed and rendered sterile.

Would it be claiming too much to say that there are serious conditions where such treatment properly administered might prove the turning-point towards recovery, or in organic diseases towards a material improvement in the general condition? Perhaps their greatest sphere of usefulness would be to place the mouths of patients in a sterile condition, preliminary to undergoing surgical operations. When we consider all the devices used in the modern operating-room, all devoted to obtaining ideal aseptic conditions; when we consider the patient anæsthetized in an atmosphere barren of pus germs, with the single exception that too frequently the patient's mouth is redolent of putrescent filth, washed with secretions of pus; when we consider such conditions, with a celebrated surgeon about to enter into the digestive tract, can we longer question the value of the preliminary treatment by the dental nurse in such a case? Then there is the infirmary practice connected with all the large hospitals. Here is a field for the doing of the greatest good to this vast class of unfortunates. The cleansing of the mouths of properly selected patients in the dispensaries, combined with the proper education for preserving oral hygienic conditions, would be of greater value in the uplifting of the masses than any other means at present employed.

Having graduated from the training-school, it would be in keeping with our other laws to compel the nurses to pass a State board examination. The passing successfully of such an examination would then entitle them to be registered as trained dental nurses. Being so registered, they would be able to practise their profession in private life. By that is not meant the fact that they would be licensed to go around indiscriminately cleansing the mouths of the people.

Their license to practise dental nursing should mean that they are permitted to cleanse, polish, and medicate the dental territory only under the prescription of the patient's attending stomatologist.

As chairman of your Section, I ask your approval for this means of placing within reach of the human race the boon of prophylaxis in stomatology. There are three good reasons why it should receive your endorsement. First it will tend materially towards the public good. Secondly, it will open to womankind a new vocation second to none in desirability. Thirdly, it will materially aid the stomatologist in the quality of his results.

Reviews of Dental Literature.

FURTHER INVESTIGATIONS IN REGARD TO "THE SALIVA AS A NATURAL PROTECTION AGAINST CARIES." By Dr. Michel, Würzburg.¹

The author asserts that the substance called in German "Rhodan" plays an important part in the household of nature, and that in every oral cavity the greater the quantity of this substance present, the fewer micro-organisms. "Rhodan" is the acid radicle of sulphocyanic acid, and has the formula CNS.

The protective power of saliva is exerted in a purely mechanical way in that it washes away injurious substances from the teeth, and also by its alkalinity, and thirdly, by the antifermentative action of the sulphocyanide of potassium contained therein. As a result of analyses of the saliva, the writer claims that it is proved that where there is an increased amount of carbonates, phosphates, and calcium in the saliva there is less caries of the teeth than where the saliva contains less of those substances which establish its alkalinity. It is also established on good authority that persons suffering from neurasthenia and anæmia have no sulphocyanic acid in the saliva, and it is well known that their teeth are much affected by caries. The use of tobacco is said to produce an increase of sulphocyanic acid in the saliva, and the author holds that, as a matter of observation, the resisting quality of the teeth is increased by such use. There follows a table giving the results of the examination of six hundred and four samples of saliva. The

¹ Weitere Untersuchungen über "Der Speichel als natürlicher Schutz gegen Caries," von Dr. med. Michel in Würzburg. Deutsche Monatsschrift für Zahnheilkunde, 27. Dezember, 1902.

mouths whence these samples were taken were examined as to their percentage of carious teeth, as to their reaction, and as to the amount of sulphocyanic acid in the saliva.

This table shows that where caries is least, alkalinity of the saliva is pronounced and sulphocyanic acid is at its maximum; where caries is most pronounced, the alkalinity of the saliva is much lessened and in many cases an acid reaction is present, and the quantity of sulphocyanic acid is much diminished and in some cases entirely wanting.

It remains to establish the action of sulphocyanic acid upon bacterial growth. The author says that saliva containing this substance will not cure an already established infection, but it will make difficult the development of all infectious elements. The author seems to believe it possible by internal medication to increase the amount of sulphocyanic acid in the saliva, and thus heighten the resistance of the teeth towards caries.

WILLIAM H. POTTER.

Reports of Society Meetings.

ACADEMY OF STOMATOLOGY.

A REGULAR meeting of the Academy of Stomatology was held at its rooms, 1731 Chestnut Street, Philadelphia, on Tuesday evening, December 23, 1902, the President, Dr. R. H. D. Swing, in the chair.

The following papers were read and discussed: "Some Considerations pertaining to Dental Diagnosis," by Dr. John C. Curry, of the Academy; "Baked Porcelain Restorations of Broken Bridge Facings," by Dr. Joseph E. Duffield, of the Academy.

(For Dr. Curry's paper, see page 349. For Dr. Duffield's paper, see page 409.)

DISCUSSION ON DR. J. C. CURRY'S PAPER.

Dr. Otto E. Inglis.—Conan Doyle put words into the mouth of Sherlock Holmes to the effect that to be a detective one must have imagination. I feel that this is true of diagnosis. One must see

with his physical eye what can be seen, and with his mind's eye what cannot be seen but may be possible. To jump to the complex or uncertain, overlooking the simplicities, is to make a grave mistake when a dental diagnosis is to be made. At the same time, not to possess a fairly complete knowledge of possibilities in and about the parts, or of means or appliances to test these possibilities, when a diagnosis is not easily made, is to fail to distinguish the disease present. Dr. Garretson was wont to say that conditions commonly tell all about themselves, and that all that is necessary is to recognize the signs by which they express themselves. During the animated discussion of the uric acid diathesis by the profession a few years ago a student consulted a dentist in relation to his left upper central incisor, which was elongated and slightly sore. Diathesis was descanted upon and antigout remedies suggested. As a matter of fact, apical abscess due to a septic pulp existed, and was later diagnosed at a distance of six feet, simply by the color of the tooth and the associated symptoms. This illustrates the overlooking of the simplicities.

The greatest difficulty in the way of diagnosis of diseases of dental origin is the reflex character of the pains and the presence of a number of possible causes of the pain. Isolation and testing by appropriate tests is the rational method of procedure.

As the essayist has said, a few well-directed questions will often elicit valuable information; as, for example, Where is the pain located? Do you have it during mastication? Does any tooth feel longer than the rest or painful when touched? Do salt, sweet, or acid substances produce a steady pain? Does the contact of hot or cold liquids produce pain; if so, how long does it last and is it a steady or a throbbing pain, and is the pain greatest when heat is applied, or *vice versa*?

I listen to the patient's description of sensations only for the purpose of obtaining a clue, while I follow up with some such question. If, for example, the patient states that pain is elicited upon touching the cervix of a tooth with the finger-nail, I think of exposed and hypersensitive dentine and investigate accordingly, touching the part and endeavoring to repeat the experience of the patient.

If the patient states that pain is felt at such a cervix when a breath of air is inhaled, and I find a deep and sensitive cavity near by, I ignore the patient's explanation and investigate by isolation test, etc.

In short, the simple and rational causes are first looked for, and if not found I begin to look beneath the surface with my mind's eye, and to think of crevicing leakage, septic dentine beneath fillings, loose fillings masticated upon, thermal shocks transmitted by fillings, hyperæmias, inflammation or abscess of the pulp, pulp degeneration or its constructive activity and also of perfect or imperfect canal fillings, dead pulps, septic or aseptic irritation of apical tissues, roots broken off and left in the process, marginal or destructive pericementitis, and so on. Each is excluded in order of probability. Where no cause is discoverable in the teeth present which may produce the symptoms, reference is made to teeth in process of eruption or which are impacted in the jaw. Next, the parts associated with the teeth are looked into. Each pathological condition has its usual train of characteristic symptoms, as well as some that are common to many dental diseases.

It is not to be supposed that one may not err in the exact diagnosis at first. A patient may have tenderness to tapping, a sensation of fulness and throbbing at the apical space, and an absence of dentinal sensitivity either to cutting or thermal changes, and even some opacity of the tooth-crown, all of which are associated with an incipient apical abscess, and yet upon opening the tooth an abscess of the pulp may be found. Usually in such a case there is a greater reaction to heat than to cold, while sudden onsets and remissions or intermissions of the lancinating pain are not uncommon.

The obscure pathologies, such as hypercementosis, absorption of roots, and pulp nodules may at times be inferred from symptoms, but their diagnosis without the X-ray is often only to be inferred by exclusion of other more common causes.

Failing a dental explanation of oral diseases or natural explanation of dental disease, local oral condition and then systemic disturbances are to have consideration in the light of professional or personal experience with such possibilities, and, failing these, the new experience should be recorded for the benefit of our brethren.

Search for primary causes is often attended with difficulty, either because of the fact that the patient is ignorant of the history of the case or mendacious. I have in mind a case of longitudinal fracture of a sound molar, in regard to which I questioned a lady. She denied biting upon hard substances, but her daughter the

next day laughed and said, "Why mother is continually biting nuts and other hard substances."

In cases of erosion a gouty history may be denied by the patient. The essayist has brought out some interesting points to be considered in making up a diagnosis, which, however, seems not to require any comment.

Dr. James Truman.—The subject has been so thoroughly treated by the essayist that there is very little to say. I am very glad, however, that the paper has come before the society. The author passes over rapidly the subject of the first dentition, and with equal rapidity considers the permanent dentition. Now, I take it that comparatively few have observed the diagnostic importance of conditions that occur in the development or eruption of the permanent teeth. Take, for instance, the second molar. Except in a very recent publication, no one has alluded to the second molar as an important factor in diagnosis. Several years ago I called the attention of the profession to the cerebral disturbance that may occur during the eruption of this tooth. At the ninth year it assumes the vertical position and may impinge upon the inferior dental nerve, and the reaction upon the pulp produces many nervous disturbances. I have also frequently found reflex disturbances manifested in the ear and other parts of the body arising from this tooth. The remedy is very simple, and consists in relieving the pressure upon the pulp by lancing deeply through the gum. Then again, in speaking of the eruption of the third molar the author does not describe the diagnostic signs. When it is lying horizontally in the jaw, how is the dentist to know it is there? He cannot see it. It is not visible. There are certain violent reflex pains which appear, and the dentist will have to judge of their cause by the number of teeth in the mouth. If there be but one molar, and there be a large space left by the extraction of the first molar, it is possible that the third may not be in a horizontal position. If both the first and second molars be in place, the dentist can diagnose almost to a certainty that there is a tooth pressing against the distal surface of the roots of the second molar tooth and causing reflex disturbance.

The author alludes to arsenical necrosis as if it were a very easy thing to diagnose. I do not quite so regard it. In the teaching of the undergraduates I have not found this a simple matter to deal with. Arsenical necrosis is practically the same as that produced by any other inflammation, with the added toxic effect of the agent.

On the whole, I like the paper, but I wish the author had gone a little farther into many matters that might be of advantage to those who need just that kind of instruction.

Dr. J. A. Woodward.—I think it is a safe rule, that when making a diagnosis one cannot clearly see his way, not to do anything, but simply to wait until the developments make the cause plain. I remember a case, reported by some one in the West, of a man who apparently had an irritated pulp in one of the upper bicuspid teeth. He tried in every way to save that pulp, but could not relieve his patient. He destroyed the pulp, but without relief. He was considering the advisability of destroying the pulp of the adjoining tooth, when the man was attacked by a very severe irritation of the skin of his whole head and face. Then the irritation of the tooth subsided. This was simply a skin irritation first felt in the tooth. So it is always better, in obscure cases, to wait until one knows clearly what to do before acting.

Dr. S. H. Guilford.—Professor Garretson used to say that in diagnosing a case he did it by exclusion. That is to say, he would conclude that in a part there might be a certain number of different pathological conditions. He would go over the case carefully, excluding in turn each condition as not indicated by the symptoms, until he came to the last, which he claimed must be present and must fit the symptoms. In a general way, that is good reasoning in diagnosis, yet I do not suppose it would always be efficient. There is an old adage which says that when you don't know what to do, do nothing. Still, sometimes I think the dentists have, like the physicians, to do something to satisfy the patient when they do not know exactly what to do.

Speaking of hypercementosis, I recall a case of a lady whose teeth were in good order, but she came to me complaining of neuralgic pain, and in the description of the case stated that whenever she was exposed to the night air she was apt to have the symptoms come on. I could find no fault with the teeth, and concluded that there must be some hidden irritation. I partially located it in the lower third molars, and persuaded her to have one of them removed. This gave her partial relief and the extraction of the other was followed by entire relief. Both were greatly enlarged at the roots. Cases of that kind we all see frequently, and they are the most difficult to diagnose. Sometimes the pain will localize in a certain tooth, but sometimes it does not, and then

we are at a loss to know what to do. It may not be a serious thing to drill into a tooth and devitalize it, but it always seems to me a serious thing to do, and for that reason I hesitate in all such cases.

Dr. Curry (closing).—In answer to Dr. Truman, I would say that when asked to read a paper I was given to understand that it should be of a certain length and occupy a certain time, and I spoke as fully upon the matter of dentition as I could in the time allowed.

In regard to Dr. Woodward's remarks, I am a stickler for conservatism. I do not often act in a case until I am reasonably sure of the diagnosis. The title of the paper is suggestive, and the things spoken of are some considerations pertaining to diagnosis, not all the considerations pertaining to all the points of diagnosis. Dr. Guilford calls attention to pain usually described as "neuralgic," by which we understand the pain described by the patient as of that vague, ill-defined character, and which shoots here and there, varying in intensity according to the cause, but which we all recognize as being a different kind of pain from the nerve-ache, or soreness or general tenderness.

I thank the society for the discussion and for the very liberal treatment accorded me.

DISCUSSION ON DR. DUFFIELD'S PAPER.

Dr. S. H. Guilford.—I am glad to have seen this work of Dr. Duffield's, which strikes me as something new and of decided value. We have had a great many methods presented to us of repairing bridges and of putting in new porcelain facings. For my own part, at the next opportunity I shall give this method a trial. Some one has said there is nothing so weak as a tooth with two pins in it, because each pin is an element of weakness, and with this little box the tooth is stronger than with two pins. More than that, the box requires no special tooth. It may be made concave to fit over the pins, and that is all we require. It is a very excellent method so far as I can judge.

Dr. Duffield.—I have probably twelve or fifteen repairs of this character, which, as I said in my paper, have been in use nearly three years. Out of that number, I think I have had one failure, in which case the bite was close. I think had the tooth been soldered it would have broken off just the same. I think that you will find not only that this will save a great deal of labor, but that

you will be able to make a repair which in adaptation and in general effect is far superior to the old method.

Adjourned.

OTTO E. INGLIS,
Editor Academy of Stomatology.

INTERNATIONAL DENTAL FEDERATION AND INTERNATIONAL COMMISSION OF EDUCATION: MEETING HELD IN STOCKHOLM, SWEDEN, AUGUST, 1902.

(Continued from page 388.)

REPORTS ON DENTAL EDUCATION (CONTINUED).

IN addition to the reports on dental education presented by various national representatives on Monday, August 18, as already published (see page 371), the Commission of Education received those here given.

The following is a summary of the report presented by Edmund Rosenthal, D.M.D., on behalf of Belgium:

In answer to the first question, which reads, "What are the preliminary studies to be required of students before beginning their professional education?" Dr. Rosenthal said that in his belief it is desirable that students should receive a complete preliminary education of a high standard, and, above all, a useful one. He recommended that the education of the candidate should be carried on in such a way as to insure perfect intellectual development. He should know the literature of different periods and should be conscious of the progressive changes which the human race has been undergoing in order to reach the relatively perfect stage of civilization in which it finds itself at present. He advocated the study of living languages so that the student may readily become acquainted with the nature of the work that may be doing and the progress achieved in the different countries of the globe. He wisely called attention to the fact that the antagonism that has been exhibited towards the dental profession has been generally directed to the lack of proper literary and scientific training of dentists, while their technical ability has never been questioned.

He did not deem it necessary to enter into a discussion of the studies that should be included in the preliminary curriculum, not because he approves of the educational programmes in force at present in different countries, but because by following them the dental candidate is put upon the same footing as the students of the other liberal professions. But

besides these studies the future dentist should be made to develop his manual ability from an early age. Manual ability can be acquired. It is not indispensable that dexterity should be an innate quality, for even those that are not naturally so inclined can in time become reasonably skilful. He attaches a great deal of importance to the study of drawing, especially drawings of the head from nature. Every dentist should be able to draw the ideal facial lines of a given type according to its origin, temperament, and special characteristics. The sooner the manual and artistic education is undertaken the more profitable it will be, for by following this plan it becomes possible to devote a great deal more time to the theoretical branches without detriment to the technical ones. The young man who at the age of twenty-two or twenty-three is not capable of using his fingers for anything beyond holding a pen is certainly in need of a professional apprenticeship of longer duration than is the one who has applied himself to the development of his manual and artistic faculties, and who is accustomed to observe and compare, and whose fingers are trained to carry out the suggestions of his brain. It matters not in what direction this manual ability is trained; so long as it exists it can be directed at any time to any line of work; but, if it be wanting, a considerable period of time is necessary to acquire it, and the practitioner will always regret having undertaken too late the manual education necessary to perform the work pertaining to his profession. In carrying out the duties of his calling the dentist is called upon to play the part of artist, sculptor, and creator, inasmuch as he has to modify disfigured faces and to repair the ravages of age. If guided by routine only,—that is, by a mere utilitarian comprehension of his profession,—he certainly may render useful service, but he will neglect the æsthetic side and will never experience the high satisfaction of executing perfect work from the point of view embracing both the artistic and the useful.

The practitioner who applies himself to the study of nature and strives to imitate her best work ceases to be the handicraftsman and becomes the artist in the full sense of the term; but, with rare exceptions, one cannot become either an artist or a conscientious practitioner without developing the germs of art which exist in every man. Through the manipulation of clay by moulding heads after nature and according to selected models that impress upon the mind the lines of the human face, and by classifying these observations, it becomes possible to determine the expression to be given to the edentulous face in order to restore the original beauty that is now absent.

Discussing the second question, which reads, "In what are dental studies to consist, how long ought they to last, and what should be the order of the programme?" he said that the course should be one of four years. The subjects of the first year should be: Chemistry, physics, botany, mineralogy, metallurgy, a considerable number of practical exercises, dental prosthesis, drawing, and modelling. Second year: General anatomy, physiology, embryology, pharmacodynamics, general histology, practical work in microscopy, dental prosthesis. Third year: Special comparative anatomy of the mouth, general and special pathology, pathological anatomy, surgical

and medical pathology, operative dentistry, practical work in operative dentistry, pathology, microscopy, and dental prosthesis. Fourth year: Medical and surgical clinics, theory and practice of surgical operations, orthodontia, operative dentistry, general hygiene in its relation to dentistry, oral hygiene, physiological and pathological analysis of human secretions, saliva, urine, etc., practical work in operative dentistry, prosthetic dentistry, facial restorations, bridge-work, and porcelain work.

In answer to the third question, "What branches of the studies taught in medical schools must the student of dentistry follow?" the essayist said that, with the exception of the practical work in the medical and surgical clinics, all the branches of the four years' curriculum should be given in the dental school according to special programmes, but as dental schools are not often in the position to afford the material equipment necessary for the complete education of the dentist, the dental student will have to pursue in the medical schools those courses in science for which the medical laboratories are especially adapted, possessing as they do the appliances and collections of specimens suited to and indispensable for this kind of work. From the fact that part of the staff of the universities and medical schools devote their time exclusively to the study of science and to laboratory work, they are better fitted, in the essayist's estimation, for imparting such instruction than men who have divided their time between teaching and practising.

Professor Dr. Hesse, of Leipzig, presented a report on the status of dental education and legislation in Germany, an abstract of which here follows:

In Germany the practice of the healing art is free, and the only legal restrictions apply to the use of the titles of *Arzt* and *Zahnarzt*, which belong only to the candidates who have successfully passed the examinations leading to those degrees. Referring to the dental institutions of Germany, he considered it necessary to say a few words regarding their organization, as the several communications which have been lately published by Dr. W. C. Barrett show that foreigners are lacking completely in information on this question. In Germany all professors of dentistry are members of university staffs and are part of the faculties of medicine. Their special work consists in the theoretical and practical teaching of dentistry, and they are in this particular sense absolutely independent. The study of natural and medical sciences is carried out in the university under the direction of the faculty of medicine. Apparently it is this arrangement which has caused Dr. Barrett to believe that our education in the practical branches is inferior to that of the United States. We believe, however, that our organization offers a great advantage, as it permits of a thorough specialization and concentration of the teaching staff to dental science and art; at the same time our students have the opportunity of becoming familiarized with medicine,—an association which we consider important enough to recommend its consideration in the countries in which education is not carried out on this plan.

He then refers to the conditions of admission to examinations leading to the degree of *Zahnarzt*, and describes in detail the various topics upon which the student is examined.

Dr. Guillermin presented the following report:

REPORT ON THE THREE QUESTIONS PROPOSED BY THE INTERNATIONAL COMMISSION OF EDUCATION OF THE INTERNATIONAL DENTAL FEDERATION.

Question 1.—"What are the preliminary studies to be required of students before beginning their professional education?"

Two kinds of studies must be considered,—namely, (*a*) the secondary education, and (*b*) the university theoretical or superior studies.

(*a*) The secondary (preliminary) studies should be the same as for the study of medicine.

(*b*) The superior studies, in my estimation, should embrace the complete study of medicine, but it would be desirable in view of its extensive scope to limit the course in medicine to four years. This would constitute not the basis of the cone as advocated by Sir Michael Foster in Cambridge, but the trunk from which would branch out the different specialties, otology, laryngology, ophthalmology, stomatology, etc.

If the organization of dental education upon this basis could not be carried out, the plan adopted for the obtaining of the Swiss federal diploma is the one that we would advocate. In this curriculum one year is devoted to natural sciences (physics, inorganic and organic chemistry, botany zoölogy, and comparative anatomy), one to the medical sciences (anatomy with dissection of the muscles, vessels, and nerves of the head and neck; practical work in microscopy and theoretical anatomy), histology, embryology, and physiology in their bearing on dentistry; practical courses in general pathology and pathological anatomy and in special pathology and therapeutics of the mouth; attendance during two semesters upon one of the surgical clinics.

Question 2.—"Of what are dental studies to consist, how long ought they to last, and what should be the order of the programme?"

After the pursuance of the theoretical studies above indicated, a minimum of two semesters should be devoted to clinical dentistry, three semesters to prosthetic dentistry, and three semesters to operative dentistry. In Switzerland the law regulating medical examinations allows the three semesters on prosthetic dentistry and the three semesters on operative dentistry to be taken in the laboratory and in the office of a licensed dentist.

In the dental school of Geneva the curriculum is so arranged that the professional studies may not take up more than three semesters. In some countries, as well as in some of the cantons of Switzerland, the diploma of physicians gives *ipso facto* the right to practise dentistry. This is a provision which we disapprove of, as we believe that physicians should not be permitted to enter upon the practice of dentistry unless they have pursued three semesters of its professional studies.

This report was followed by one on "Dental Legislation in Switzerland," by the same author. A *résumé* of this report here follows:

In the canton of Geneva the dental school grants the diploma of *médecin-chirurgien-dentiste*, which has now been substituted by the *licentiate* in dental surgery. This diploma confers by itself the right to practise dentistry, but only in the canton of Geneva. Incidentally it may be stated that the diploma of doctor of medicine of the faculty of Geneva likewise confers only the right to practise medicine in the canton in which it is granted. These diplomas are easier to obtain than the federal diplomas. The dental school of Zurich does not issue diplomas; it merely prepares the students for the federal examinations. The federal diploma is one of the requirements for admission as a regular member of the Swiss Odontological Society. By a singular anomaly in a country as enlightened as Switzerland, one canton, that of Glarus, and two demi-cantons, those of Basle-Campagne and Appenzell, have declared that the practice of medicine and dentistry is free. It must be added that sometimes the authorities of some of the cantons confer the right to practise to holders of foreign diplomas provided that they confer the right to practise in the countries in which they are granted.

Physicians, except in some cantons, as in Zurich and Berne, have likewise the right of practising dentistry without the necessity of any special professional training. Dental education is given in Switzerland in two schools, that of Geneva and that of Zurich. Recently the chair of odontology has been created in the University of Basle. This course comprises (1) pathology and therapeutics of the mouth and teeth; (2) anatomy of the mouth and teeth; (3) diseases of the mouth and teeth; (4) operative dentistry and prosthesis; (5) stomatology. Courses 1, 2, and 5 are given at the university; courses 3 and 4 in the office of the professor.

The following additional report on dental education in Switzerland was presented by the delegates of the Swiss Odontological Society, L. C. Bryan, D.D.S., Theodore Frick, D.D.S., and Paul Guye, D.D.S.:

REPORT ON THE THREE QUESTIONS PROPOSED BY THE INTERNATIONAL COMMISSION OF EDUCATION OF THE INTERNATIONAL DENTAL FEDERATION.

Question 1.—"What are the preliminary studies to be required of students before beginning their professional education?"

The preliminary studies should be equivalent to those required from medical students. Considering, however, the importance of languages, the preference should be given to a baccalaureate degree comprising one living language besides the native language of the candidate. It would also be advisable that part of the time should be devoted to drawing and to mathematics.

Question 2.—"In what are dental studies to consist, how long ought they to last, and what should be the order of the programme?"

The studies should cover four years. The practical exercises in the laboratories, clinical and otherwise, should take up a large portion of the student's time, and should begin (especially prosthetic dentistry), with the first semester of the course.

The three delegates approved the conclusions presented by Dr. E. D. Rosenthal, D.M.D., Brussels, but stated that besides the topics mentioned by the Belgian delegate, technical requirements as practised to-day in the best schools of America should be included in the programme.

Question 3.—"What branches of the studies taught in the medical schools must the student of dentistry follow?"

In order to abbreviate their report, the delegates stated that they fully agreed with the answer to this question as presented by Dr. Rosenthal.

Dr. E. D. Rosenthal, Brussels, Belgium, then presented an additional report, on "The Conditions of Affiliation of all Dental Schools with the International Commission of Education."

Reports on Dental Legislation were presented by Dr. Maurice Roy, France; Dr. Jos. Arkövy, Hungary; Dr. Chas. E. Pearson, Canada; Dr. Weiser, Austria; Dr. E. D. Rosenthal, Belgium; Dr. V. Haderup, Denmark; Professor Limberg, Russia; Drs. L. C. Bryan, Paul Guye, and Theodore Frick, Switzerland.

MONDAY, AUGUST 18.

The Commission was called to order in the Grand Hotel at 9.15 A.M. by the president, Dr. Truman W. Brophy.

The first question proposed by the Federation was brought up for discussion.

Dr. Aguilar proposed the following amendment:

"In order to be admitted into a dental school, the applicant should have the same preliminary education as required from students of medicine, law, etc., before they are admitted into a university."

Dr. Aguilar was opposed to the suggestion that the student should take a course in manual training before entering the dental school.

Dr. Guerini spoke on the imperative necessity of preserving the high standard of preliminary education.

Dr. Jenkins approved the amendment as presented by Dr. Aguilar.

Dr. Godon stated that a preliminary manual education is necessary, and he opposed Dr. Aguilar's amendment.

Dr. Guilford agreed with Dr. Godon's views concerning the advantages of preliminary manual education for the dentist.

Drs. Guldberg and Förberg were of the opinion that manual training should commence after the entrance of the student into the dental school.

In order to make his amendment applicable to all countries, Dr. Aguilar proposed to add the words "or equivalent" after the word "same."

Dr. Smith considered that this addition was not fully satisfactory.

Dr. Queudot stated that the preliminary education in the case of the dentist should be the same as for other professions.

Dr. Frank was not in favor of Dr. Aguilar's amendment, and asked how this preliminary manual education should be carried out.

On motion of Dr. Harlan, it was decided to refer the amendment presented by Dr. Aguilar to a committee composed of Messrs. Harlan, Godon, Aguilar, Hesse, Harding, and Smith, in order to frame it so that its application to every country should be possible.

President Brophy objected to this amendment, as it would lower the status of dental education in the United States by reason of the inferior standard of some medical schools in that country.

After a long and agitated discussion the question was referred to the next session of the Commission, and the meeting then adjourned.

AFTERNOON SESSION.

The meeting was called to order at three P.M. by President Brophy.

On motion of Dr. Smith, the following answer to the first question was adopted:

"The same qualifications as are required from students of medicine and of law in those countries in which professional schools are under the supervision of the government, or equivalent qualifications in countries in which such supervision does not exist. The equivalence of these qualifications should be determined by the secretaries of public education of the respective governments."

On motion of Dr. Godon, the question of preliminary manual education was referred for discussion to the next session of the Commission in Madrid.

The Executive Council was directed to prepare the questions to be discussed at the next session of the International Commission of Education.

The report by the secretary-general of the Commission of Education, Dr. Roy, was adopted, and the Executive Council was requested to prepare a report on the same subject to be presented at the next meeting.

The following officers were then unanimously re-elected: Dr. Truman W. Brophy, president; Drs. Patterson, Zsigmondy, Kirk, and Cunningham, vice-presidents; Dr. Roy, secretary; Drs. Frick and Guye, adjunct-secretaries.

President Brophy thanked his colleagues for the support, kindness, and confidence which had been bestowed upon him, and for his re-election as chairman for the ensuing year,—an office which, he said, he hesitatingly accepted. He also thanked his colleagues for their interest and activity in everything concerning the Federation work, and congratulated them upon the results obtained, which, notwithstanding the existence of some differences of opinion because of the differences in the character and nature of dental legislation in different countries, was excellent, promising a great deal for the future.

The meeting then adjourned to meet in Madrid in April, 1903.

Editorial.

INTERSTATE RECIPROCITY.

THIS subject has become of first importance in the evolution of State laws. When these, governing dentistry, were originally passed in the several States, the idea was then that each legislative body should enact a law satisfactory to the dentists within its State boundaries, and no regard was paid to the individuals outside of these limits who might possibly desire to pass over these boundaries and become practitioners therein. While this may have been an oversight upon the part of the framers of the several laws, and selfishness may not be justly ascribed as a motive, it remains as a fact that the effect has been to limit the value of the dental diploma to the State in which it is issued.

Whatever may have been the motive, the effect has been to confine the practitioners of each State within its legal jurisdiction, and to pass beyond, means a State board examination and possibly,

as in New York, a decision as to preliminary education. The man of Pennsylvania may have graduated years ago with honor in dentistry, may have practised a quarter of a century with satisfaction to his patients and credit to himself, but should he desire to change his field of usefulness and establish an office in New Jersey or New York, he is at once served with a notice,—No admittance except by compliance with the provisions of the State law. The man whose health has become broken by the severe northern climate may desire to change to more congenial surroundings elsewhere in the United States, but he is again met with the same un-American answer,—No admittance. This has become such a serious statutory evil that even the sticklers for law, and more law, are beginning to feel the pricks and are themselves anxious to find a way out of the legal morass into which they have been plunged by their unwise legislation.

Complaints have been made of the laws of England and Europe excluding dentists from practice in their several countries. These laws, as a rule, are liberal compared to those framed in this country to debar our own people from practice. The present condition is simply a professional war between the States constituting this federation. It is assumed that each State has a right, under the Constitution of the United States, to arrange its own laws to suit its best interests without regard to those of outsiders, foreign or domestic. It has been assumed that this comes under the provision of police duty of the several States. This may be true, but there is another portion of this Constitution that distinctly prohibits one State from legislating against any other,—“Full faith and credit shall be given, in each State, to the public acts, records, and judicial proceedings of every other State.”

There has been no decision given by the United States Supreme Court as to the relation this bears to dental laws and their antagonistic attitude to other States. Until a case is carried to this court of last resort there must be a period of legal uncertainty regarding this whole question. A decision is not probable in the near future, as neither side of the controversy seems anxious to meet the issue.

This being true, there is an evident desire in certain quarters to bring about a more liberal condition of things, but no one seems to know where to begin. The men of one State will say to a neighboring State, in substance, When you raise your entrance standard to ours we will consider the proposition of reciprocity, and not

before. Another will reply, Our standard is that of the high schools of our State and the diplomas from these we regard as sufficient. Another will contend that the rule adopted by the National Association of Dental Faculties governs the colleges and, indirectly, the State boards, and between these conflicting views the possibility of coming to an amicable decision is very remote.

Recently the "Philadelphia Dental Club," a dining organization, appreciating the importance of this subject, sent out invitations to presidents of State boards and deans of many dental colleges to meet with them round the banqueting board and then and there to discuss this problem. The result was not altogether satisfactory. The declinations were many, and while a goodly number were present and the time was profitably spent, there seemed to be no well-defined plans to meet the difficulty and to hasten the day when an individual duly accredited in one State should be held equally worthy in any other. While the discussion failed to reach a distinct proposition, it did fully represent the chaotic state of the dental professional mind throughout the country, a condition, if not one of apathy, at least bordering on indifference.

As an important profession we cannot afford to let this matter rest where it is at present. Whether legislation in one State antagonizing the acts of another State be declared constitutional by the highest authority in the future, the present attitude of the several States is a serious obstruction to dental practice, and is contrary to the accepted methods in other lines of interstate policy. The State laws governing dentistry, and at present in force, are an effectual barrier against reciprocity. To the writer the analogy between this condition and a tariff on goods established between the States is very strong. This would not for a moment be tolerated, yet here we have something worse,—a tariff on intelligence and skilled training equally at variance with the liberal ideas inculcated in the formation of the Republic.

The question, What can be done? was not answered at the recent symposium alluded to, nor is it possible to give a final answer here. It seems, however, to be capable of solution upon a compromise basis and upon no other. So long as each State insists upon its educational methods being considered primarily to a settlement, nothing can be done. If New York, through the Regents, will insist on so many "counts" as a preliminary basis, there can never be an harmonious settlement with other States, and New York is

simply a typical illustration of all the others. It is evident something will have to be sacrificed to promote harmony, for the situation has become intolerable.

While each one may have a solution of the problem, it may be not inappropriate for the writer to give his ideas upon a subject of deep interest not alone to him, but to all dental educators.

In the first place, it would seem to be the duty of the National Association of Dental Examiners to take up this subject seriously at its next meeting at Asheville, N. C. It will hardly be possible, in a large body like this, to consider this important subject as it deserves; the writer would therefore suggest that this body might call a conference of all the presidents of State boards and with these, the deans of Dental Colleges, to consider ways and means to accomplish the end desired. This would seem to meet all the preliminary requirements, and would avoid frictional criticism on the part of colleges or State boards. There is an equal interest upon this subject in colleges and State boards, and both should be consulted.

The writer feels that whatever may be the outcome, there is but one settlement possible, and that is for each State to change its law so that a diploma representing dental college work and State examination should be accepted without question in any State of the Union. To attempt to go back of the State examination and say to the applicants, Your preliminary training has not equalled our requirements, or, The colleges from which you have received your diplomas are not of equal standard with ours, will make interstate reciprocity impossible. The minimum standard of entrance qualifications has been established by the National Association of Dental Faculties, and upon that the diploma has been granted, and upon that basis alone the diploma, supplemented by a State examination, should be universally accepted. Anything more than this cannot reasonably be required. State prejudices must go and be sacrificed to the good of the greatest number, and eventually to the benefit of the dental profession.

Bibliography.

THE INTERNAL SECRETIONS AND THE PRINCIPLES OF MEDICINE.

By Charles E. de M. Sajous, M.D., Fellow of the College of Physicians of Philadelphia; formerly Lecturer on Laryngology and Dean of the Faculty in the Medico-Chirurgical College, etc. Volume First. With forty-two illustrations. F. A. Davis Company, Publishers, Philadelphia, 1903.

In the April issue of this journal notice was given of the publication of this book, and a portion of the "Preface and Summary of Contents" was given in the language of the author, to afford some idea of the contents of the then unpublished work. At an earlier period than was then anticipated this remarkable book is furnished the reading medical public.

When Dr. Sajous announced the conclusions at which he had arrived regarding the ductless glands, it aroused great interest in medical and lay circles, and the promised book was eagerly anticipated as possibly confirming the assertions of the author. Whether these hopes are sustained must be left to those most competent to decide the question.

There can be no doubt, however, of the fact, apparent throughout the volume, that the author has made an exhaustive examination of the medical literature of the world to sustain his views. In the opinion of the reviewer, Dr. Sajous has in the past done more in this direction than any other individual in the medical ranks. This book, therefore, must be regarded as a mine of information regarding this special subject, whatever other and antagonistic views be entertained. The pages bristle with quotations; indeed, these are bewildering at times, and in some degree tend to obscure the author's original ideas.

This first volume covers eight hundred pages, and the author says of it, "We have always deemed it our duty to closely follow the development of the various branches of medical science as the yearly panorama passed before our eyes, in the hope that we might eventually collate the necessary elements for a more solid foundation than medicine now possesses."

He further informs the readers why the main subject of this book was early called to his attention, for he says, "Among the subjects which had received attention during our preliminary inquiry was the physiology of the ductless glands. Although the thyroid body had been studied by a larger number of investigators than the adrenals, the latter seemed to us to present a feature directly connected with the problem; *i.e.*, the marked affinity of adrenal extractives for oxygen. We therefore determined to follow the clue this afforded as far as recorded facts would permit, and to trace its connections beyond the field of physiology if possible."

He again states: "It thus became evident that the red corpuscles were not the only carriers of oxygen, and that the blood-plasma played an important part in the distribution of this gas. Indeed, we subsequently ascertained that the red corpuscles were secondary factors in this important function,—*i.e.*, mere carriers, pack-mules, as it were,—and that it was the oxygen-laden adrenal secretion dissolved in the plasma itself which carried on all the oxidation processes of the organism."

That the author has gathered his ideas from the world's medical literature is demonstrated by his admissions in the following paragraph: "We fully realize, however, that our factors were necessarily drawn from a mere fraction of existing literature,—though a vast amount of the latter had to be scrutinized,—and that the balance of recorded data and future work of the galaxy of brilliant workers which our profession contains in all lands may eventually completely transform our views. . . . Yet, if our aim is properly interpreted, it will become apparent that we have encompassed the whole field of medical science in our labors, in the hope that a broad horizon would enable us to discover its weaker parts."

It will thus be seen that the author's deductions are mainly founded upon the original labors of widely scattered investigators. While this is true, no one can complain that the author has taken undue advantage of these accumulated facts to build up an unwarranted hypothesis; on the contrary, he constantly desires the facts presented to speak for themselves.

In regard to the action of poisons upon the adrenals the author has this to say: "It is evident that the adrenals are submitted to excessive activity when toxics are introduced into the organism, and that the local lesions are the expression of a physiological function utilized beyond its normal limits."

This in regard to the action of uric acid has some special interest to dentists: "*Uric acid, notwithstanding the prevailing belief to the contrary, is chemically harmless.* It has been fed to animals or injected into their blood in very large doses without giving rise to untoward symptoms. Even its continued administration has failed to bring about the least pathological change in the structures which it is generally thought to assail, as shown experimentally by A. C. Crofton."

In summing up the conclusions at which the author arrived in regard to the "Pituitary, Thyroid, and Adrenals as a System," he states:

"1. The thyroid gland supplies the blood with a secretion which has for its object to sustain the functional activity of the anterior pituitary body.

"2. The anterior pituitary body is directly connected with the adrenals through the cervico-thoracic ganglia, the splanchnic nerves, and the semilunar ganglia of the sympathetic nervous system.

"3. The thyroid gland, the anterior pituitary body, and the adrenals are functionally interdependent, and constitute a system through which cardiac action, respiration, and general cellular oxidation are maintained.

"4. The thyroid gland sustains the normal functional activity of the anterior pituitary body, while the latter in turn maintains the normal activity of the adrenals.

"5. The functional activity of the anterior pituitary body is increased when the blood contains an excess of thyroid secretion or sufficiently active toxics—bacterial toxins, poisons, physiological toxalbumins, etc.—to compromise the general cellular integrity of the organism.

"6. The functional activity of the adrenals is increased proportionally with that of the anterior pituitary body when the latter's activity is increased from any cause.

"7. The functional activity of the anterior and posterior pituitary bodies is passively decreased when the blood contains an insufficient proportion of thyroid secretion or is inadequately oxygenated, or when from any cause its intrinsic metabolism is reduced or impaired through the deficiency of any of its molecular constituents.

"8. The functional activity of the anterior pituitary body is actively decreased when the blood contains a sufficiently active toxic of any kind—bacterial toxin, poison, etc.—to induce excessive metab-

olism of its intrinsic cellular elements, and thus cause exhaustion or molecular metamorphosis of the latter.

"9. The functional activity of the adrenals is decreased proportionally with that of the anterior pituitary body, whether the reduced activity of the latter be due to active or passive pathogenic factors."

It will thus be seen that the anterior pituitary body, instead of being, as generally supposed, the least important portion of the organism, assumes at once a function heretofore unrecognized,—that of regulating the amount of oxygen absorbed from the air by controlling the secretion of the suprarenal glands. The diminutive organ becomes, if this view be sustained, the most important organ of the body and the "governing centre of all oxidizing processes."

In relation to the posterior pituitary body the author says, "The posterior pituitary body is the general centre of the organism from which all the nervous energy transmitted by the bulbar centres arises."

The author apparently sums up his conclusions in the following paragraph:

"Briefly, our inquiry seems to us to have shown that the adrenal system is the source of the secretion which with the oxygen of the air forms the oxidizing substance of the blood-plasma. It has also revealed, we believe, the origin and mode of distribution of the bodies with which this oxygen directly or indirectly combines. . . . Finally, it has suggested that in addition to these agencies all leucocytes and, under certain circumstances, the plasma contain a protective agency, — trypsin, — which, with Metchnikoff's phagocytic cells, serves to destroy micro-organisms and convert their toxins and other albuminoid poisons into harmless products."

The author's views have been given principally in his own language, and the selections have been made in an effort to give his conclusions as briefly as possible. It is, however, recognized that this review imperfectly represents his laborious work. This covers so much ground that any attempt to give it adequate treatment must result in failure.

The question, Will Dr. Sajous's deductions be accepted? cannot be answered here. Credit must be given for the original thought and the foundation which he has laid, broad and deep, for others to build upon in future investigations. This contribution to medical science must be regarded as among the most remarkable that the

close of the nineteenth century and the early years of the twentieth have produced. Whoever undertakes to antagonize the positions and deductions taken must be prepared to show wherein the author is wrong, and that through exhaustive experimental procedures. In this way only can the truth or falsity of his conclusions be established.

It does not seem unreasonable to conclude that the two volumes will have a wide circulation. That the first volume deserves this is beyond question. It would be a valuable addition to any medical library if it had no other reason than that of the extensive literature quoted.

The first volume is presented in the satisfactory manner usual with the F. A. Davis Company.

ORTHODONTIA. A Text-Book for the Use of Students in Dental Colleges and a Hand-Book for Dental Practitioners. By J. N. MacDowell, D.D.S., Professor of Orthodontia in the College of Dentistry, University of Illinois, etc. Illustrated. E. H. Colegrove, 65 Randolph Street, Chicago, Ill.

There is no branch of dentistry that has received more attention than that of orthodontia, and yet there is, probably, no work that the average dentist is called upon to perform that is more distasteful to the operator than the regulating of teeth. To the artistic mind, coupled with mechanical skill, this work appeals as no other, with the result that there has been a multiplication of text-books on this subject, each having a distinct value, and from present indications the end is not yet.

This work of Dr. MacDowell is, in many respects, a very valuable addition to the list of books on this subject. It has been the aim of the author to "make it a most thorough and practical text-book on orthodontia for lectures, dental students, and practitioners." That he has succeeded in this must be admitted.

While Chapters I. and II., on "Comparative Dental Anatomy," have a certain value, they do not seem to be appropriate to a work of this character. It is difficult to see what relation exists between the teeth of vertebrates, fishes, reptiles, mammals, etc., and the irregularities of the human denture, and this is not made clear in the text.

The real work of the author does not begin until Chapter IV. is reached, when he takes up "Temporary Teeth, Anomalies, Erup-

tion, Occlusion, etc. This is an excellent chapter, the deciduous teeth being too often omitted in books on orthodontia. This is naturally followed by the "Permanent Teeth: Eruption and Occlusion." "Anomalies of the Teeth classified" is the subject of Chapter VI. Passing on over the intervening chapters to Chapter IX., in which the author covers the various "regulating appliances" of a number of writers, including those of his own, the reader opens on Chapters X. and XI., on "Making Appliances, Wire, Tubing, Tools, Nuts, Taps," etc., and "Soldering Technique." These will appeal to the practical man. All, it is presumed, will agree with the author when he says, "The special requirements of these appliances should be simplicity, efficiency, stability, cleanliness, and inconspicuousness." These two chapters are of special value, giving the practitioner methods of producing appliances in the best and simplest manner. One not familiar with the work could not, it seems to the writer, fail to do it well if the very lucid description of how to prepare these is strictly followed.

The author does not favor "cutting away bone in front of a tooth." He says, "Occasionally there are cases favorable for assistance by this method, but they are few in number."

In Chapter XX. the author enters more at length into "Appliances and Methods of Treatment."

Chapter XXVIII., on "Retention," constitutes the last chapter but one of the book, and must be considered one of the most important, for without skill in the formation of retention appliances, coupled with judgment in placing them, the work of the orthodontist is valueless.

The book is most profusely and, upon the whole, very satisfactorily illustrated.

That the author has succeeded in presenting a very practical work must be admitted, and one that should be very helpful both to students and practitioners.

A BRIEF MANUAL OF PRESCRIPTION WRITING IN LATIN OR ENGLISH. For the use of Physicians, Pharmacists, and Medical and Pharmacal Students. By M. L. Neff, A.M., M.D.
F. A. Davis Company, Publishers, Philadelphia.

While this has been prepared for medical men and pharmacists, it is of equal value for dentists, especially dental students

The author says, "The notes here printed are the outgrowth

of experience in teaching medical students, and are offered to a wider public in the hope that they will be of service to the physician and pharmacist."

To write a prescription properly some knowledge of Latin is requisite, and the author, recognizing this, devotes some thirty-four pages to this portion of the subject, although he "wishes to disclaim any attempt to teach the Latin language, as such." While this is true, this part of the book is made so clear that any one should be able to follow the author and succeed in acquiring sufficient knowledge of the language to write a prescription creditably.

The principal defect in the book seems to be in the altogether too limited space given the metric system. As this is coming more and more into use, it should have claimed a more generous share of attention.

The book is well worthy a place as a text-book in dental colleges, where something of the kind is very much needed.

Domestic Correspondence.

THE OLDER METHODS OF FILLING TEETH.

TO THE EDITOR:

SIR,—I have just read the article in the April number on the progress of tooth-filling in fifty years with a great deal of interest. It takes me back to the first operation I saw Dr. Arthur perform, and then to my own efforts the following day in filling with annealed gold. The operations that were performed then and in subsequent years were many, and probably there were not three years of more unsatisfactory practice in tooth-filling ever performed than resulted from the efforts to use annealed foil without appreciating the essentials and without proper instruments for the performance of the work. Finely serrated instruments, electric and hand mallets, and small pellets of gold were all the result of the new method, and to obtain these and to learn how to manipulate with them required more than a day's experience. The new process involved more than ordinary skill. Principles were involved with which the operator had to make himself familiar, and not until this

was done was he in a condition to perform successful or preservative work. The ignorance of the operator was certainly the reason that so much unsatisfactory work was done. Many consecutive hours did I watch my preceptor, F. M. Dixon, perform contour fillings with soft foil, but they were made with deeply serrated instruments and hand pressure. I do not think he ever had a mallet in his office. In durability and comfort his work was not to be excelled. This much could not be said of Dr. Webb's operations. Many of his two and three days' work were failures, because the endurance of the periosteum was ignored. This has been an error on the part of many beautiful adhesive gold-foil operators. Teeth and fillings have been sacrificed after a few months of discomfort, where the patient's endurance in the operation was not the only tax they suffered.

I am glad that this method of practice has given way to not only less exhaustive treatment, but to one more in harmony with the possibilities of tooth-structure.

C. N. PEIRCE.

Miscellany.

CRYSTALLIZED PEROXIDE OF HYDROGEN.¹—The firm of E. Merck has been supplying a solution of peroxide of hydrogen at thirty per cent. for some years. This peroxide fulfils all requirements as regards purity and stability. This preparation is appreciated as an antiseptic, more especially in connection with surgical instruments and appliances.

Peroxide of hydrogen, contrary to recent assertions, crystallizes with care in a very distinct manner. The preparation used contained from ninety-five to ninety-six per cent. of hydrogen dioxide. In a freezing mixture at -20° it remained liquid; of ether and solid anhydride it solidified into a hard resisting mass.

The refrigeration must be sufficient to the evolution of heat which takes place. If the operation is not conducted under these conditions oxygen very rich in ozone is given off.

The most interesting reaction takes place with sulphate of

¹ From *Zeitschrift für angewandte Chemie*. By William Staedel.

titanium. By its help we are able to detect 1 part of peroxide of hydrogen in solution in 1,800,000 parts of water. When the ratio is 1 to 18,000 the reaction is manifested by the appearance of a deep yellow coloration, becoming bright yellow for 1 in 180,000.

Peroxide of hydrogen is capable of forming crystallizable compounds with metallic salts. The compound containing cadmium lends itself very well to the demonstration. On pouring a ninety to ninety-five per cent. solution of peroxide of hydrogen into a concentrated solution of chloride of cadmium the mass becomes thickened by the formation of small, fine, silky flakes. When collected and dried they contain about twenty-three per cent. of the peroxide of hydrogen.

From the point of facts already known we may say with safety that the use in surgery of an antiseptic product incapable of introducing foreign matters into wounds, or of producing anything besides water and oxygen by its decomposition, is made practicable by the present preparation. Anhydrous peroxide of hydrogen appears to be easily transported. A well-packed case was placed on a truck and sent on a journey of fifty or sixty kilometres without any change.

A SUGGESTION.—A filling in a tooth is only the restoration by mechanical means of the integrity of the enamel coating in form and continuity. That is, an indestructible something is put into a defect in this enamel coating so accurately that if the natural movements of teeth, jaws, tongue, lips, and saliva cannot keep it clean we may supplement nature by our brush and floss and washings, so that the teeth *may* be kept clean. For a clean tooth never decays, and a clean tooth has no tartar upon it; so pyorrhœa alveolaris is not known in the presence of entire cleanliness.—E. H. BOGUE.

A METHOD FOR BACKING PORCELAIN TEETH FOR METAL WORK.—Hold a piece of 30-gauge platina plate flat against the tooth with an edge touching the side of a pin, mark a line from the pin across the metal, then place the platina flat against the tooth under the pins and mark two lines from the pins across the first line. Punch holes where the lines intersect; place backing and file flush with the edge of the tooth all around; then remove platina and

adapt "crown metal" (pure gold and platina rolled together) two-one-thousandths of an inch, by first marking with the pins an impression in the foil, then puncture holes with a sharp-pointed instrument, then press to place upon the tooth, and with an instrument having a hole to telescope over the pins, with a turn burnish the extended edges of the punctured holes around pins, thus making a water-tight joint. Have the foil—gold surface always next the porcelain—extend beyond the edge of the tooth the sixteenth of an inch and cover the end fitting the cap (if a crown); then replace the platina backing and hold by splitting the previously cut pins.

The free edge of the foil should be drawn towards the backing at a slight angle, or at a right angle to the backing. The foil extending over the end of the facing next the cap protects it from borax, draws the solder, and reflects a better shade at the joint in front. The free edge of foil at the mesial, distal, and incisal edges protects the tooth from the flame and borax, where, with the old form of backing it is often exposed in trimming the investment. The matrix-like box thus formed with the cap draws the solder to such shape as to allow in finishing with the least labor the imitation of the outline of the palatal surface of incisor teeth, a detail never observed.—P. B. McCULLOUGH.

SALOL AS A MOUTH-WASH.—James has made a series of experiments with a proprietary emulsion of salol, known as odol, to determine whether it is broken up into its active constituents in the mouth. He has shown that it is decomposed by the saliva, by the mucous membrane, and by various bacteria, thus slowly liberating carbolic and salicylic acids.—H. C. W., *American Medicine*.

NEURASTHENIC NEURALGIAS.—E. Jendrassik calls attention to the need for greater care in the diagnoses of neuralgias, particularly in the differentiation of those cases of pseudo-neuralgias or neurasthenic neuralgias frequently attributed to some non-existent cause of irritation, a supposed bone splinter or imperfectly filled tooth, forms of neuralgia referred to by Paul Blocq under the name topoalgias, or by Galippe as dental obsessions. These pseudo-neuralgias, described by Blocq as monosymptomatic neurasthenias,

are to be recognized not only by the neurasthenic symptoms and heredity, but by the absence of the well-known symptoms of true neuralgia, such as periodicity, flushing of the face, involuntary shedding of tears, etc., all of which fail in the neurasthenic variety.—C. S. D., *American Medicine*.

DEFINITION FOR ARTICULATION.—The four positions of the lower jaw in its relation to the upper, from a strictly dental stand-point, are occlusion (being the relation desired in taking the “bite”), right lateral occlusion, left lateral occlusion, and incisal occlusion. The combination of these four positions in action constitutes articulation.—P. B. McCULLOUGH.

COLORING ARTIFICIAL TEETH.—In the natural tooth the greater portion is dentine, and that is always yellow and extends nearly to the tip of the tooth. The blue or gray shade is in the enamel, and its intensity depends upon its thickness, sometimes one-eighth of an inch of the end being solid blue. But above this and all through the substance, beneath the enamel, should be the yellow body, light or dark, according to the necessity of the case.

Were this principle carried out in artificial teeth, a natural effect would result, now so lacking in a large proportion of cases.—DR. L. P. HASKELL, *Dental Review*.

A NEW LOCAL ANÆSTHETIC DISCOVERED.—Hungarian dentists and chemists claim to have discovered a valuable *local anæsthetic*, an alkaloid nervocidine, the hydrochloride of which is stated to have similar properties to cocaine, but to produce a much more lasting anæsthesia. The base is obtained from the Indian plant, “Gasu Basu,” the properties of the leaves of which were first discovered by D. Dalma, who successfully employed them in painful pulpitis, with such good results that he reported that the drug might displace arsenic for dental purposes. B. von Fenyvessy has investigated the properties of the alkaloidal hydrochloride, as prepared by Dalma, which is a yellow amorphous, hygroscopic powder,

readily soluble in water. It produces marked anæsthesia of the cornea in 0.1 or 0.2 per cent. solution, which is very persistent. and a 0.1 per cent. solution brushed on the mucous membrane of the cheek also gives marked anæsthesia. Stronger solutions, exceeding 0.5 per cent., produce irritation of the cornea, and a two per cent. solution causes ulcerative keratitis in dogs and rabbits, which lasts ten days, during which period the anæsthesia also lasts. It does not appear to produce anæsthesia by subcutaneous injection. Its general effect is that of a paralyzing poison. Although its anæsthetic effect is much more prolonged than that of cocaine, the length of time before this effect supervenes, the irritation caused by the drug, and the toxic symptoms it produces do not point to the probability of its being of general service, except perhaps in dental practice.—*Lancet*.

POLISHING PORCELAIN.—As perfect a polish may be given porcelain as can possibly be given gold or any of the metals. After grinding the porcelain, go over the surface with a sand-paper disk, following with a cuttle-fish disk. Then take oxide of tin polishing putty, and with wooden points, known as Barker's porous polishers, as beautiful a surface may be given to porcelain as can be imparted to it by fusing. By this method one may have the assurance that a perfect polish may be given inlays without fusing again.—DR. C. F. HARTT, *Dental Review*.

CEMENT ANCHORAGE FOR AMALGAM FILLINGS.—Remove carious dentine and properly prepare the cavity. Line the cavity with thin cement, being careful not to use an excess. Place a piece of amalgam in the cavity and press to place, forcing it into close contact with the cavity walls. This will crowd out any excess of cement. Pack more amalgam until the margins of the cavity are neared, then clear them of any cement, so that only amalgam will be in contact with them. Then finish the filling as usual, applying a matrix, if necessary. The cement, besides securely anchoring the filling, which is of great value in strengthening a frail tooth, also prevents the dark discoloration so often seen in teeth filled with amalgam.—McCLAIN.

BLEACHING AN ANTERIOR TOOTH.—In a clinic at the Chicago College of Dental Surgery Alumni Association, Dr. J. P. Buckley gave his method of bleaching an anterior tooth with sodium dioxide as follows:

The dam is placed over the tooth to be bleached and the adjacent teeth. A thin platinum band is placed about the tooth to be bleached and white gutta-percha warmed and pressed about it to form a pocket about the cavity. By the use of a small gold or platinum spoon the powder is placed in the cavity, and with a glass instrument is forced down into it and into the upper third of the root. Distilled water is now dropped into the cavity. A platinum ribbon is held over the cavity, forcing the generated oxygen into the dentine. This is followed by removing the treatment, washing and drying the cavity and repeating the operation as may be required to satisfactorily bleach the tooth. Should it be found impossible to remove the pigment mechanically with water, a solution of three per cent. sulphuric acid is used to chemically dissolve it, after which wash with water and let dry without using hot air preferably.

Now burnish a paste made of precipitated calcium phosphate and distilled water into the lower third of the root-canal and against all exposed dentine. Make a base for final filling, using a light-colored cement.—*Dental Review*.

DENTAL INSPECTION IN SCHOOLS.—Ensch and Polus call attention to the importance of health boards giving attention to such diseases of children in schools as are readily relieved, as dental caries, adenoid vegetations, affections of the ears and eyes, and refers to the very satisfactory results obtained by the special dental service of Brussels organized in 1877, and the work of various individuals in other European cities. The ten commandments of dental hygiene proposed by Dr. Röse, of Munich, are commended to the attention of hygienists and parents: 1. Forget rather to wash the body than to wash the mouth and clean the teeth. 2. Accustom children to the pleasure to be derived from dental hygiene. That which is neglected in youth is never retrieved later. The care of the milk teeth is no less important than that of the permanent teeth. 3. Avoid sweets and very soft foods. The best means of preventing caries is the vigorous chewing of bread with thick crust. 4. Never forget

to clean the teeth at night. He who defers cleansing the mouth till morning resembles one who shuts the stable door after the horse is stolen. 5. Mechanical cleansing with the aid of a brush constitutes the basis of all artificial hygiene. 6. Inoffensive antiseptic mouth-washes and a good tooth-powder are very efficacious for completing the buccal and dental hygiene. 7. Have the teeth examined twice a year by a dentist, who will discover and check the spread of decay. 8. Have the tartar removed from time to time. 9. Old roots which cannot be saved by treatment should be removed, whether painful or not. 10. Mothers should give preference to foods rich in nutritive salts (green vegetables, milk, eggs, etc.) before the birth of their children and during lactation; and the child during earlier years should take the same with a view to greatest possible development of the teeth.—C. S. D., *American Medicine*.

A NEW ANTISEPTIC.—Septoforma is a condensation product of formaldehyde,¹ with the terpen-naphthalin-phenol group, which by means of an alcoholic potassium oleate forms a yellowish non-caustic solution in water. While it softens the skin, it is not soapy, and even the concentrated solution does not redden or irritate. According to Engels, a three per cent. solution destroys staphylococcus pyogenes aureus in three minutes, the cholera vibrio in one minute, and the typhoid bacillus in ten minutes. Instruments of various metals were exposed for three days to thirty per cent. solution of septoforma, and none of them showed the slightest change except those made of aluminum. It was first introduced through veterinary surgery, but has been used by several observers in gynæcologic work and in general surgery. It seems to have advantages over other similar disinfectants, owing to a much less penetrating odor, absence of local irritation or injury to metal instruments, and that it has a considerable degree of germicidal power. It is recommended for the disinfection of instruments in the strength of five per cent. to ten per cent. solution and as a wash for wounds in a three per cent. solution. It is also useful in various skin affections and in suppurative ulcers in the form of a ten per cent. ointment with lanolin, with which its deodorizing property makes it of special value.—H. C. W.

¹ Die med. Woch., October 6, 1902. 414.

Current News.

PENNSYLVANIA STATE DENTAL SOCIETY—SPECIAL NOTICE.

OWING to the number of inquiries and demand for accommodations the Committee have been compelled to secure larger quarters for the meeting of the Pennsylvania State Dental Society, to be held July 7, 8, and 9, 1903, and have decided on Hotel Sterling, in Wilkes-Barre, Pa.

H. B. McFADDEN, D.D.S.,

HOWARD S. SEIP, D.D.S.,

JAMES P. NICOL, D.D.S.,

Executive Committee.

May 1, 1903.

NEW JERSEY STATE DENTAL SOCIETY.

THE thirty-third annual meeting will be held at the Auditorium, Asbury Park, commencing at ten A.M., Wednesday, July 15, and continuing the 16th and 17th. Four papers will be read by eminent members of the profession, and, as with last year's new departure, the clinics will be made a great feature of the meeting. Forty clinicians have promised to be present, and the immense floor-space at the disposal of the society will be filled with everything new and novel in dentistry.

The Columbia Hotel opposite the Auditorium will be the headquarters, and the rates \$2.50 and \$3.00 per day. Mark off the date to-day, and come July 15. You will be made welcome.

CHARLES A. MEEKER,

Secretary.

NATIONAL DENTAL ASSOCIATION.

THE next annual session of the National Dental Association will be held in Asheville, N. C., commencing Tuesday, July 28, 1903. Preparations are being made for one of the best meetings in the history of the Association. The Section officers are preparing

a programme which, from a scientific and practical stand-point, will be difficult to excel. The clinics will be made a special feature.

All dentists interested in the advancement of the profession should attend this meeting.

All State and local societies should elect delegates who will be sure to attend the National meeting, they being entitled to one delegate for every six of their members.

The usual railroad rates will be had on all roads in the United States and part of Canada,—one fare and a third, on the certificate plan.

L. G. NOEL, *President*.

A. H. PECK, *Recording Secretary*.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

THE National Association of Dental Faculties will convene in the Ball-room of the Battery Park Hotel, Asheville, N. C., Friday, July 24, at eleven A.M.

The Executive Committee will meet at same place Thursday, July 23, at 2.30 P.M. All parties having special business with this committee are hereby notified to be on hand at this time.

H. B. TILESTON, *Chairman*,

S. W. FOSTER, *Secretary*,

Executive Committee N. A. D. F.

HARVARD ODONTOLOGICAL SOCIETY.

THE Harvard Odontological Society held its twenty-fifth annual meeting and ladies' night on the evening of February 28, 1903, at Young's Hotel, Boston.

President Julius G. W. Werner being absent because of sickness, Recording Secretary John W. Estabrooks presided.

There were seventy-one guests and members present.

After a reception and banquet the society and guests were entertained by an illustrated lecture entitled "Argentina," by Mr. George H. Worthley, of Brookline, Mass. Music was furnished by W. S. Kerr, soloist, and Mrs. William B. Eddy, pianist.

This society enters upon its twenty-sixth year under the most

promising conditions, there being eighty-nine active, fifteen corresponding, and two honorary members.

The officers elected for the ensuing year are, President, Julius G. W. Werner, D.M.D.; Recording Secretary, John W. Estabrooks, D.M.D.; Corresponding Secretary, Arthur H. Stoddard, D.M.D.; Treasurer, H. Winchester Hardy, D.M.D.; Editor, Horace L. Howe, D.M.D.

Executive Committee.—John W. Estabrooks, D.M.D., William P. Cooke, D.M.D., Lyman F. Bigelow, D.M.D.

ARTHUR H. STODDARD,
Corresponding Secretary.

SOUTH DAKOTA DENTAL SOCIETY.

THE annual meeting of the South Dakota Dental Society will be held at Redfield, S. D., June 3, 4, and 5, 1903. A fine programme is assured, in charge of Dr. J. P. Buckley, of Chicago. All reputable dentists of this and other States cordially invited. The State Board of Dental Examiners will be in session at the same time and place.

D. ST. I. DAVIES, *President*,
Woonsocket, S. D.
W. W. PRICE, *Secretary*,
Centerville, S. D.

WISCONSIN STATE DENTAL SOCIETY.

THE thirty-third annual meeting of the Wisconsin State Dental Society will be held at West Superior, Wis., July 21, 22, and 23, 1903. The usual railroad rates will be obtained. The profession is cordially invited to be present.

T. M. WELCH, *President*.
W. H. MUELLER, *Secretary*.

MADISON, WIS.

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No. 7.

Original Communications.¹

PORCELAIN INLAYS AND RESTORATIONS.²

BY W. T. REEVES, D.D.S., CHICAGO, ILL.

MR. PRESIDENT AND MEMBERS OF THE ACADEMY,—In presenting this paper for your consideration this evening, I have given it a broad title in order that all phases pertaining to the use of porcelain as a restorer of lost tooth-structure may properly be brought out in the discussion. The discussion is oftentimes a most valuable complement to a paper.

The word inlay has come down to us from the first users of porcelain as a filling-material, and still clings to us. Its use is criticised by the low-fusing contingent, who claim that they make fillings, and that the advocates of high-fusing porcelain make inlays only.

“Inlay” properly described the work in its first conception, because it was porcelain inlayed into tooth. “Filling” is no broader in describing what we are doing to-day with porcelain,

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read before the Philadelphia Academy of Stomatology, January 27, 1903.

because we do more than fill,—we build up, restore to original form and contour. “Restoration” would seem to fully describe all cases from the simplest to the most extensive that we have to deal with.

We have several divisions or methods among porcelain workers. Some use high-fusing, others low-fusing bodies. Each of these classes of workers is divided again as to methods, but we are all agreed upon the many good qualities of porcelain as a filling-material. It would hardly seem necessary at this late day—in fact, it is not necessary—to say anything in defence of porcelain as a filling-material. Opposition that was very outspoken and in no uncertain terms two and three years ago is now very guarded, and is trying to ride along under the cloak of conservatism, admitting its usefulness and that it has a place in dentistry, “when indicated,” leaving you to form your own judgment how much “when indicated” covers. Now, I have no quarrel with the conservative man. I believe, in most places and under most conditions, he is the safe man. It is only when he unintentionally takes the place of the “dog in the manger” that I want to enter a protest. It oftenest happens that the persons heard from under these conditions are those who are looked upon as leaders in the profession, and their negative endorsement “when indicated” is often the means of keeping many good men from taking up the work; for they say, and think, if Dr.’s X, Y, and Z give it but that scanty endorsement, they had best wait for further developments. I say of Dr.’s X, Y, and Z not that they are unknown, but that they are unknowing. Such discussion as, “I have made a few inlays for labial cavities and cavities that are not subjected to stress; such cavities in the anterior teeth where gold would be unsightly I believe inlays are indicated, etc., etc.,” practically means that such person has made so few inlays as to know nothing about the technique of the work, consequently his judgment as to “where indicated” is not worth much. If he were one-tenth as well prepared to handle porcelain as a filling-material as he is to handle gold, he would go from easy to more difficult cavities, until there would practically be no limitations in his hands and he would be as warm an admirer of porcelain as the most enthusiastic of us. Again, how discouraging to the uninitiated or the beginner must be that oft-repeated remark, “Oh, yes, Dr.’s A, B, C, and D can do nice work; they have a special gift for the work, but the great majority

of dentists will never succeed with porcelain inlays." I do not believe there is any gift about it. I believe that what one person can do, all can do. To whatever walk of life you turn, those who have become prominent in their several callings are those who were workers. The genius is like a "flash in the pan," he soon passes away, but the one who attains to and retains a prominent place among his fellow-men is the worker. It is only a matter of the different degrees of application necessary. How many instances can be cited in all walks of life where success has been achieved over what seemed insurmountable obstacles at the beginning. I do not want to seem to hold out that there are any obstacles for you to overcome in taking up porcelain work. I believe that if every one present to-night would give to mastering the technique of porcelain inlays but one-tenth of the time he gave to mastering gold as a filling-material, he would have fifty per cent. greater success with porcelain as a tooth-saver than he has with gold.

X, Y, and Z object to the length of time required to make a good inlay, stating that they could put in gold in half the time. With very few exceptions this is not true. Small pin-head cavities, fissures in bicuspid and molars, especially the fissure extending from the distal pit over on to the lingual surface of superior molars, can be quickly and successfully filled with gold. Aside from these few cases I know of no cavities that cannot be filled with porcelain in less time than they could have been filled with gold on the average. I know that to-day I am handling more patients and putting in more fillings with porcelain than I was able to do with gold. Any one would be foolish to undertake to perform any task with which he was but slightly familiar, or one that he performed so seldom as not to "have his hand in," if he expects to accomplish it in the same time as one who is doing that work daily. That applies with full force to the handling of porcelain as a filling-material. Who of you does not remember how long it took to put in gold fillings when you began your practice, fillings that you now put in better in one-third of the time simply through every-day familiarity with the material. If you will practise for six months, and then for the second six months will keep strict account, you will find that it takes less time with porcelain than with gold, with less physical strain upon both yourself and your patient. In the second year you will put in very few gold fillings.

Right here I want to enter a protest against certain statements that appeared in a recently published paper. In the January issue of the *Dental Cosmos* was published a paper by a Western man read before a State society in the far West. The preparation of an approximal cavity in a central incisor, involving a portion of the cutting edge, was described. I quote the paragraph following said description:

"The preparation of such a cavity in most instances is to the experienced and artistic worker only a matter of five or ten minutes, the making of a matrix five or ten minutes more, and fifteen minutes for baking and dressing leaves ample time for cementing and discharging well within the hour."

Cosh

Either the inlay made in that length of time is a very imperfect, slovenly piece of work and not worthy of being called a porcelain inlay, or the writer has not kept well within the bounds of truth. How discouraging this must be to the beginner! It takes me from two to three times that long to make a porcelain restoration for an approximal cavity involving a portion of the cutting edge. There is one thing that porcelain has no competition with, and that is time. Every step and detail of the work must be carefully executed. The least defect at any stage of the work means failure of the whole. The inlay must be perfect in fit and contour, or it should not be set. It may not be as good as desired in color, but if perfect in fit and contour it will do perfect service for the patient.

We have passed the experimental stage. Porcelain as a filling-material has come to stay. It will not answer any longer to put off inquiring patients with the stock remark that it is only a fad, that you do not advise their use, and that their particular case is one in which porcelain would be a failure. Fads develop quickly and pass as quickly. Porcelain inlays have been fifteen years and longer reaching their present stage of development, and have won their way against the most stubborn opposition that was ever waged against any new material or method brought before modern dentistry. The way has been blazed by pioneers in the work, and methods and materials have been developed to a high stage of completeness. It only remains for the profession at large to enter upon the work, and enter it under conditions that are favorable to success. One thing they must realize, and that is, that the mere

getting of a furnace, an outfit of bodies, and a little platinum, and reading a few articles on the subject in the dental journals, is not all they will have to do to start them on porcelain inlay work. They must prepare themselves by good technique instructions, then careful, thorough dummy work in the laboratory. The work is not so difficult as to be a bugbear if one but enters the path from the right direction and passes along with a sure, steady step. There is a good deal of pessimism about the foregoing, and by nature I am an optimist, and cannot refrain from giving you a little of that optimism in connection with porcelain as a filling-material. I have prepared and read six papers before as many different State societies this past year on this subject, and while I have endeavored to make them individual, I have, from necessity, quoted more or less, particularly in describing the purely technical work. I am going to make this broad statement: There are scarcely any cavities in which gold can be utilized that porcelain cannot be successfully used, and there are so many places and conditions under which gold cannot be used and where porcelain will be a perfect material with which to restore lost tooth-structure that I place it first in point of applicability.

I will not take your time to enumerate all the places in which porcelain can be used, but only some cavities in which gold cannot be used and where porcelain will do perfect service, and then some in which porcelain is the only material indicated.

For the young, in whose mouths gold fillings fail faster than cement fillings wash out, and where cement washes out so fast as to be dangerous, one may come very near doing permanent work with porcelain.

For the aged, whose strength will not permit the long sittings necessary for the insertion of a gold filling, one can do permanent work with porcelain, because the work can be divided between two or three sittings.

For those bordering on nervous prostration, and those with high-strung nervous temperaments, for whom it is a physical impossibility to prepare a cavity, even for a cement filling, to say nothing of gold, one can do permanent work with porcelain. In these cases porcelain is a boon to both patient and operator, for there is no material we use for the reception of which the cavity can be prepared with as little discomfort to the patient as for the insertion of a porcelain inlay; there is no necessity for extension for prevention, or for undercuts.

For those refined, sensitive natures, to whom the display of gold in the front of the mouth is an ever-conscious annoyance, one can confer a lasting benefit by the use of porcelain, and restore teeth so that at close conversational range fillings would not be perceptible.

In teeth that are loose from pyorrhœa one can do permanent work with porcelain, whereas one could not pack gold either by hand-pressure or mallet, and would have to resort to amalgam or cement.

The other conditions, which are by far the most important, and which prove a quality that has not been credited to porcelain and bring out a point I want to make, are the following, in which porcelain only is indicated: In extensive cavities, in which decay has approached so closely upon the pulp that death of the pulp would be almost sure to follow if a metallic or cement filling be used, one may fill with porcelain with almost absolute certainty that the pulp will remain alive.

Cavities on the buccal or labial cervices of molars, bicuspsids, or incisors that remain sensitive to thermal shocks when filled with gold become perfectly normal when gold is replaced by a porcelain inlay.

When, after loss by fracture of a large portion of an anterior tooth, it becomes desirable to retain the pulp alive, on account of incomplete development of the root, the lost portion may be restored to full contour and usefulness by a porcelain tip, and the pulp will remain alive.

In these and other similar cases, nature revolts at the introduction of a metallic or plastic material for the replacement of the lost tissue, but is perfectly resigned to the introduction of porcelain in the form of inlays. Compatibility of porcelain to tooth-structure is a quality belonging to porcelain that we have not appreciated, because heretofore we have had no material that possessed this quality. Compatibility of material to tooth means a great deal; it means more than one realizes at first. If nature could reproduce lost tooth-structure, that would be ideal restoration. But nature being unable to do this, art steps in with porcelain, and in true art the artifice is hidden. The definition of compatible, as given by the Standard Dictionary, is, "1. Capable of existing together, congruous, consistent. 2. Being in harmony, mutually tolerant, accordant, congenial."

In our search after an ideal filling-material we have looked for one that would be easy of manipulation, permanent in preserving quality, and harmonious to its environment.

That we have in porcelain a material that possesses these qualities there is little doubt, and yet the possibilities of porcelain are as little appreciated to-day as were the possibilities of electricity twenty years ago.

Compatibility may be in part the explanation of the well-known clinical fact as to why there is seldom or never any recurrence of decay about a porcelain inlay or restoration. Scientific theories are to be respected in so far as they have been demonstrated, but in the face of practical demonstration or clinical facts scientific theories have to readjust themselves. You may say that all the materials with which we fill teeth are immune to caries. I grant this in the strict interpretation of the word, but with the exception of one they do not bring immunity to the mouth. Gold, either in the form of crowns or fillings, no matter how highly polished, will tarnish and collect increasing amounts of food deposits. All other materials will collect and retain food deposits, and thus be an ever-present menace to approximating tooth-structure.

Glazed porcelain will not retain food deposits, and is not affected by the fluids of the mouth.

I have always contended that an inlay should never be ground on any surface other than the occlusal surface in molars and bicuspids and on the cutting edge in the anterior teeth. It is the practice of a good many inlay workers, after setting an inlay, to grind the surface to make it level with the plane of the tooth, and they thus lose a large per cent. of the quality of immunity.

This is necessitated by the use of low-fusing bodies, which have a tendency to assume a spheroidal form in fusing, and in high-fusing bodies by over-building or over-contouring. All necessary grinding should be done before the matrix is removed and the inlay again glazed. This glazed surface is a protection to surrounding and approximating tooth-surfaces, and brings immunity to a greater extent than any other material or agent we use. The tooth that has for approximate contact point the glazed surface of porcelain is better protected by sixty per cent. from liability to decay than when both contact points are natural tooth-structure, while the tooth that has gold or other filling-materials for contact point

is more endangered by twenty per cent. than in the original condition.

Before giving the technique of the work in detail, I want to say something of color selection. I want to bring before you a new principle in color selecting. It is the general practice to select the color as one selects a facing for a crown,—by taking the shade-guide furnished with every outfit of bodies and selecting the color that seems to be a match for the tooth. In selecting a facing general effect is aimed at and the selection is one that harmonizes with the adjoining teeth. A person may select a facing that, placed between two natural teeth, cannot be detected, but if a corner of that facing is joined to the corner of either adjoining tooth it will not match at all, because each tooth has different underlying colors. It is the underlying colors that must be looked for, and it is just in proportion as one is able to see these underlying colors, and then to reproduce them in the inlay, that he will be successful. A typical light-yellow tooth will probably have either a gray or a blue tinge, or both, in its inside substance. Those same colors should be reproduced in the inlay, or it will not be a perfect match. I use the shade-guide not to get a match for the tooth, but as an aid in looking for the underlying colors and the depth of those colors.

If you see yellow, brown, blue, gray, or all of them, hold the shade-guide to the tooth and determine the strength of these colors, also the order in which you will use them to get the effect you want. Make a memorandum of this. For instance, you desire a match to a typical light-yellow tooth; the cavity extends from neck to cutting-edge, involving at the cutting edge a third (more or less) of the width of the tooth. Yellow No. 2 on the Brewster shade-guide looks to be a perfect match for the tooth, but at the neck you will find the yellow a little deeper, with a grayish tinge through the centre third of the tooth and a bluish tinge towards the cutting edge; you will find on looking closer that the blue seems to reflect through a gray and that there is very little yellow in this part of the tooth. My memorandum would read thus: Patient A.—Foundation, cervical, No. 3 yellow; centre, No. 6 gray; cutting edge, No. 9 blue under No. 5 gray; over all, No. 2 yellow, with No. 11 for enamel.

I would proceed to use them as follows: Build my foundation; the yellow, gray, and blue would then be put in their respective places and baked as one layer; have the three bodies properly

moistened and arranged on the slab so that you know which is which; take as nearly as you can judge the proper amount of each and place at their respective places; then draw a gnarled handle gently over the pliers to bring the moisture to the surface and cause them to run together; cease instantly, and you will have a perfect blending of the colors; if you continue to jar, you will get a mixture instead of a blend. Allow the body to dry, and bake.

Shrinkage will necessitate the addition of more of these colors, and this time, as you want gray over the blue, you will use only No. 3 yellow and No. 5 gray; have the bodies ready and proceed as before; this will still further harmonize your colors, because the yellow will extend still farther down your inlay and modify the gray that was put on in the central portion, while the blue of the lower third modifies the gray, so that when they are all covered with the lighter yellow you have such a harmonizing of colors that you can't tell it from nature's work itself.

If shrinkage causes any lack of contour, and it most always does, cover all with a layer of Brewster's XX body. This is a new product. You cannot say it is of any particular color unless you call it enamel color. So far it seems to fill its mission perfectly.

You now have a completed inlay that I believe comes the nearest to reproducing nature of any means or methods heretofore attempted. A still further artistic effect can be obtained by the use of what I call primary colors. They are as deep as ivory black, Prussian blue, Van Dyck brown, burnt ochre, etc. They are high-fusing bodies and not paints, but they must be used as paints would be, by putting them on mixed with oil, for you cannot put them on thin enough or smooth enough when mixed with water as you do ordinary bodies.

These are a set of colors that were made for me by Mr. Brewster, of Chicago, and are meeting a long-felt want.

With them you can imitate that steel-blue line you so often see just above the cutting edge, also tobacco stained teeth and the white and yellow mottled teeth. These effects have heretofore been impossible, but with the primary colors they can be reproduced with life-like naturalness.

THE TECHNIQUE OF PORCELAIN INLAYS AND RESTORATIONS.

I do not think I can do better than to detail my method of making inlays, and afterwards give you my reasons for such procedure.

It is almost needless to say that I am a strong advocate of high-fusing bodies. By that we mean bodies that fuse above the melting-point of gold. Of necessity, to use such bodies something fusing at a higher point than gold has to be used with which to form a matrix. Platinum $\frac{1}{1000}$ of an inch in thickness is the best and most desirable material for matrix formation.

Platinum $\frac{1}{1000}$ of an inch in thickness is what I have always used, and it has several qualities that make it superior to platinum $\frac{1}{2000}$ of an inch in thickness. The very fact that it requires more work and care to burnish into the cavity will cause a more perfect matrix to be made when the work is accomplished; also it will have more stability and reduce the danger of warpage, while baking the porcelain, to the minimum.

The burnishing of the matrix I divide into four divisions or steps; needless to say that the annealing and burnishing is repeated at each step. A piece of $\frac{1}{1000}$ -inch platinum is cut large enough to extend well beyond all the margins other than the cervical margin. After annealing in the Bunsen flame, place in position so that the surplus will be about equally distributed beyond the margins of the cavity. Take a piece of wet cotton or spunk and place so as to depress the platinum into the cavity, using a minimum-sized round-nosed burnisher and adding additional pledgets of the wet cotton as the platinum is carried to place, care being taken that at no time are you in danger of the burnisher going through the cotton. At this step you do not attempt to turn the platinum over the margin. Remove the cotton and matrix from the cavity, and if your packing has been thorough you will find the platinum has been carried to every part of the cavity and your margins are fairly well defined, with little or no danger of breaking through the platinum. If you have broken through the platinum inside the cavity, no harm will result, as the body will bridge across without danger of flowing through. If you have any surplus at the cervical margin that will press upon or hurt the gum while burnishing, trim away at this time. Anneal and return to the cavity for the second step.

Pack partially full of wet cotton, but not over the margins; then, using any method that is easiest, turn the platinum over all the margins and down upon the tooth. To accomplish this I use a piece of ordinary twilled tape, passing it up so as to engage all portions of the platinum at once, then draw it in the direction that will cause the platinum to lay over the margins and down upon the tooth in all directions, thus bringing the folds equally well distributed, and fairly well burnished to the surface of the tooth.

Remove from the cavity, and if the platinum has lapped over the tooth far enough to bind and hold into the cavity, trim away until the matrix will remove from the cavity freely. Anneal and return to the cavity for the third step.

At this stage your work is entirely upon the margins. The platinum that lapped over on the tooth will enable you to hold the matrix into the cavity securely enough with your fingers for you to accomplish this work. All wrinkles or folds must be burnished out and beyond the margins in both directions. It matters not if the matrix springs from one part of the cavity while burnishing upon another, although you will endeavor to hold it firmly in place; the next step will correct all faults of that nature.

The burnisher should be used so that the head bears upon the margin cavityward and the shank upon the margin toothward; in this manner you will burnish every portion of the margins until you are satisfied with their adaptation to the tooth. Also burnish the interior of your cavity so that your matrix will have as close adaptation inside the cavity as at the margins.

It may be necessary for you to anneal several times before you complete this stage of the work, but do not leave this stage until it is thoroughly completed.

We now come to the last and final burnishing. I employ a method by which the matrix is held firmly to every part of the cavity and at the same time does not interfere with the burnishing of every part of the matrix. For that purpose I use a strip of rubber dam which is drawn tightly and binds the matrix into the cavity in all directions. You can now go over all the margins and surfaces and burnish out all the spring there may be in any part of the matrix. It is not necessary to spend as much time in burnishing at this stage as at the previous stage, as the close fit is already practically secured.

Now comes the task of removing the matrix from the cavity

without warping it. The capillary attraction of the saliva between the matrix and the tooth will often hold it very tightly. By patient and careful teasing you can accomplish this without any warping. If sprung ever so slightly, dry the cavity and matrix and repeat the last burnishing. Grasp the edge of the platinum at some point as far removed from the margin as possible, and where there is no fold to make it rigid, with a pair of laboratory pliers that can be locked, burn off the saliva in the Bunsen flame to avoid any possibility of gassing. The matrix can now be handled freely in building in the porcelain, for the bending of the platinum will take place at the pliers and not near the margins. At this stage, if desirable, the patient can be dismissed, as there is no necessity of reburnishing any part of the matrix after having done a baking.

For illustration of handling the body, I will describe the making of an inlay for an approximal cavity in a central incisor extending from the cervical or gum margin to and including a third or half of the cutting edge. Select some one of the several good bodies that are on the market to build what I call the foundation of the inlay. I use close body or Brewster's foundation. Have it finely ground, for it will pack more solidly, carve better, and shrink less than the coarser ground. Build it into the matrix little by little, jarring it down well to make it solid; build out the corner in excess of what you expect the contour to be, to allow for shrinkage; when sufficiently dry, carve it to shape. Carve the lingual surface right down to the contour the matrix gives you, then carve away what will be the labial half of the inlay, so that the room for laying on your colors will be the same at the edge of the tooth as at any other part of the inlay. Bake this, and if you have estimated your shrinkage correctly you have practically an inlay for the lingual half of the cavity; if shrinkage has been more than expected, build on more of the foundation and bake again.

You are now ready to build on the colors you want the inlay to be, and you can vary the shading from neck of tooth to cutting edge at pleasure. I never mix two or more bodies together to vary the shade of one, but depend on the thickness of the layer to give me the shade I want. I can best illustrate this by showing the effect of holding a sheet of colored glass to the light; you get a certain shade of that color; now place another sheet back of it, and you get a deeper shade of the same color, and by adding more

sheets of glass you get a still deeper shade of the same color. Build your colors on in layers and bake each layer as you go along. When you have built your colors to almost full contour cover the whole inlay with a neutral color that will allow the underlying colors to reflect through; in this way you will get a translucent effect, and it is the only way in which natural translucency can be obtained. In the tooth you are trying to match the colors are all in the dentine and reflect through the enamel; the enamel of all teeth is practically the same color.

All inlays, whether restoring contours or simple saucer-shape cavities, I build up in layers, and never less than three layers,—foundation, color, and enamel.

Before stripping the platinum from the inlay, try into the cavity to see if you have the contour perfect, also to judge of the occlusion as near as you can by observation. You cannot have the patient close upon the inlay, because previous to its being set it would be easy to fracture the porcelain. After the cement is completely crystallized a thin porcelain filling in the occlusal surfaces of molars will have the full strength of the whole tooth to resist masticating stress and is in no danger of fracture.

If the contour is lacking, build on more body; if too full, grind and change as desired, and return to the furnace to be glazed again.

I will now give my reasons for taking more time than the majority of inlay workers spend in baking an inlay.

Why build in layers? An inlay built up in layers accomplishes three objects,—first, a natural-looking, translucent inlay; second, an inlay built of three or more layers of different body will break up the absorption of light, so that from whatever angle or point of view you look at it, it will look practically the same, while an inlay built all of one body or mixture will absorb light all in one direction, and viewed from one point will look all right, but from the opposite point of view will show up as plain as black and white; third, that great bugbear of most inlay workers, the cement showing through after the inlay is set, is overcome. You will often hear operators say that they had a splendid color before the inlay was set, but after it was set the cement killed it entirely. That was because the inlay was all baked of one body and the cement could reflect through from underneath as easily as the light was absorbed only in one direction from above.

The three points I claim for this method are translucency, avoidance of shadow, and prevention of cement reflection from underneath.

I will close by giving you a law of physics that has not been understood or appreciated by inlay workers.

A dentist has been brought up all his life on the one law of self-retentive form of cavity and interlocking form of filling, and it is hard for him or inlay workers to break away from that law. There are inlay workers to-day who are working upon self-retentive forms of cavity formation, and grooving their inlays or baking into them platinum pins and loops to make them as near interlocking as possible.

I believe inlays depend for their strength of retention upon close adaptation and the crystallization of the cement under pressure. If two sheets of glass are adapted, with water between them to exclude the air, one cannot forcibly pull them apart. A joiner prepares the surfaces of two pieces of wood so that they are in close adaptation to each other, and placing glue between them clamps them into a vice and leaves them to harden. If there be any appreciable amount of glue, there will be no strength of joint. There is no strength in the glue. The strength is due to close adaptation and crystallization under pressure.

If this be true, there is no need of inflicting the additional pain upon the patient that the self-retentive style of cavity formation would entail.

I hope I may have given you some ideas and principles that, if studied and followed, will lead to a larger and more extended use of porcelain as a filling-material.

METHODS OF CONTROLLING HEMORRHAGE OF THE ORAL CAVITY.¹

BY H. E. BELDEN, M.D.

I HAVE been asked by the secretary on Stomatology to read a paper which would be of interest to the medical as well as to the

¹ Abstract of a paper read before the American Medical Association, Section on Stomatology, New Orleans, May 5 to 8, 1903.

dental profession. I have selected for my subject, "Methods of controlling Hemorrhage of the Oral Cavity." This may not be as important to the general practitioner as to the specialist; still, as the blood is the life-fluid of the body, any suggestions to prevent its loss will, I think, be of interest to the profession at large, especially as the pathology and treatment of hemorrhage of the oral cavity do not differ materially from that of hemorrhage generally.

The pathology of the hemorrhagic diathesis is not perfectly understood, and its actual cause cannot always be satisfactorily explained. It is quite evident that the bleeding continues from a lack of harmony between the coagulation of the blood and the contractility of the vessels.

There is a tube invented by Wright, by which the coagulation time of the blood can be determined. The blood is sucked into the tube and its fluidity tested at intervals of less than a minute.

The normal time for blood coagulation is from two to four minutes, but in the hemorrhagic diathesis, and in certain diseases, the time is so extended that a clot does not form quickly enough to engage the fibrin and act as a plug in the mouth of the vessels, but, on the contrary, coagulating in from six to twenty minutes, the clot, forming outside, acts as a vehicle to hold the wounded surfaces apart and facilitates the free oozing of the blood. Therefore hemorrhage continues from a perverted relation between the constituents of the blood which are necessary to form a clot (fibrin ferment, fibrinogen, and paraglobulin) and the contractility of the circular muscular fibres of the arteries, veins, and capillaries.

We know that the vasomotor system of nerves not only acts on the entire vascular system as a whole, but can control the blood to a circumscribed locality. So in the wounds caused by leeches, bleeding continues for hours after the removal of the leech. Could this not be explained by the fact that the leech has produced a circumscribed vasomotor paralysis?

I think that an important point in the arrest of hemorrhage is that the doctor impress the mind of the patient with his ability to control the hemorrhage, thus overcoming the effect that fear has on the vasomotor centres as they control the contractility of the muscular coat of the vessels.

I have noticed, after the extraction of teeth, that fear has a tendency to increase the hemorrhage. For example, Miss T. came into my office the other day to have a tooth extracted. She is not

of the hemorrhagic diathesis, but presented a marked case of surgical fright. After the extraction she bled profusely.

Dr. J. A. Bodine, in a recent clinical lecture, cites a number of cases where death has been caused by fright. He says that the autopsy findings are exactly the same in cases of death from fright as in those from chloroform poisoning, the cause of death in both cases being a vasomotor paralysis, "that is to say, the nervous system lost control over the motor nerve leading to the blood-vessels, and especially the veins of the body, and as a consequence the patient bled to death into his own tissue."

The simple term hemorrhage is used when the blood passes outside the body.

If it escapes *within* the cavities of the body it is known as *internal* hemorrhage. When a small quantity of blood is forced or infiltrated into the tissues, extravasation is produced.

Internal hemorrhage may occur in two different ways,—by rupture of the vessels, and by diapedesis. In diapedesis the corpuscles of the blood escape into the tissues through the walls of the vessels.

The control of hemorrhage depends upon its cause. The cause may be accidental, that is, come from injury or disease, or it may be intentional, as in operations or the extracting of teeth.

The hemorrhage may be arterial, venous, or capillary, but is often a combination.

When there is injury to the arteries or large veins, ligature is necessary, and when to the smaller veins and capillaries, we resort to sutures, compression, and styptics.

After the extraction of teeth prolonged bleeding might occur from the dental artery becoming entangled in the ragged edges of the alveolus and its mouth being held open. In this case the bleeding would be red blood and spurt in jets. A drill run down into the cavity would disentangle the artery and stop the bleeding. In the same way it is possible that a nerve might become entangled. This would cause neuralgia. Relief would respond to the same treatment.

With proper treatment, death is seldom a result of hemorrhage of the oral cavity. When it does occur it generally comes from the hemorrhagic diathesis or from accidental puncture to the larger vessels, as the jugular vein and carotid artery, or, in cases of cancer and other malignant growths, to capillary bleeding from the slough of unhealthy granulations. When the hemorrhage occurs from this

cause the general condition of the patient is so serious that death is imminent anyway.

The treatment of hemorrhage of the oral cavity may be classed under three heads,—mechanical, medicinal, and physiological.

The mechanical methods consist of direct application, as plugging or tamponing, compression, ligating of the artery, torsion and suturing, position of the patient, etc.

As hemorrhage of the oral cavity is usually capillary, compression is often all that is necessary to control it, when properly applied.

In this connection, I will tell of the heroic treatment resorted to with good results by Dr. Fry, of Hebron, Neb., of which I lately read in the *Dental Digest*. Tooth extraction was followed by hemorrhage in a patient subject to bleeding. He took an impression of the mouth in modelling compound; when cold, he trimmed it to make an appliance that could be worn in the mouth, notching it to receive a strong bandage to be tied over the head. He then made a thin batter of plaster, added a pinch of salt, and filled the appliance, putting it at once into the mouth and pressing it into place. When the plaster was set he added the bandage and tied it firmly. The socket had previously been packed with fluid extract of ergot. Immediate relief was given.

In cases where a predisposition to hemorrhage is known or suspected, before operating it is well to give systemic treatment, the treatment depending upon the general condition of the patient.

Among the new remedies which have appeared is calcium chloride. The *Medical Brief* has this to say of it: "Calcium chloride, in doses of from eight to sixteen grains every two to four hours, should be tried in all forms of persistent hemorrhage. This salt increases the coagulability of the blood, but if used more than three days consecutively, it has the opposite effect."

In a recent number of the *Dental Cosmos* is the following, taken from the *Revue de Stomologie*, of Paris:

"USE OF CALCIUM CHLORIDE TO PREVENT HEMORRHAGE AFTER TOOTH EXTRACTION.—As is well known, the extraction of a tooth may give rise to severe hemorrhage in persons suffering from hæmophilia. Dr. C. E. Vallis, assistant dental surgeon in King's College Hospital, London, has observed the case of a woman, aged twenty-five years, presenting the hemorrhagic diathesis, in whom the extraction of a tooth was followed by a hemorrhage which lasted thirty-six hours. As the teeth of this patient were in very bad condition, and as the extraction of all the carious

teeth became necessary because of dyspeptic troubles from which the patient was suffering, Dr. Vallis endeavored to use some means by which the coagulability of the blood would be increased. With that object in view he administered calcium chloride in weak doses during a period of eight days previous to the time set for the performance of the operation. He extracted an incisor, an operation that was performed without the slightest loss of blood. Continuing to administer the same agent, he was able to extract every tooth without hemorrhage. Since then Dr. Vallis has observed a similar case in which calcium chloride has given the same satisfactory results. The disagreeable taste of this medicament, and the slight tendency to constipation which it induces, are the only inconveniences connected with its administration, even after a continuous use during a period of three to four weeks."

The *Medical Journal* gives the following formula ascribed to Bertignon:

Crystalized calcium chloride	4 grammes	60 grains.
Syrup of mint	30 grammes	1 ounce.
Distilled water	90 grammes	3 ounces.

To be taken in the twenty-four hours, a tablespoonful every two hours.

Dr. A. J. Ochsner gives a method of treatment in cases of hæmophilia, which consists of giving albumin in the form of whites of eggs. He says, "When from four to six whites of eggs are given three times daily there seems to be a very definite effect exerted upon the clotting properties of the blood of these persons."

Another remedy which increases the coagulability of the blood and is creating general attention as a hæmostatic is *gelatin*. It should be given in large doses, from one hundred to three hundred grains daily, and can be continued indefinitely. It seems to be contraindicated only in Bright's disease. It is doubtful whether it should be used subcutaneously or intravenously, as cases of tetanus have been reported from its use. We can understand this, for we know that gelatin is the medium used for propagating bacteria; and several authorities give it as their opinion that sterilization destroys its hæmostatic properties. When applied locally, an antiseptic should always be used in conjunction with it. It is a splendid systemic remedy, and the good results consequent upon its use are probably due to the nourishment of the vasomotor centres.

The following I have taken from the *New York Medical Journal*, copied from the *Progrès Médical* of April 5, 1902: "M. Marc Laffont and M. André Lombard conclude that whenever some nutritional vice modifies the cryoscopic and other properties of the

blood there may be a glycosuria, an albuminuria, or a hemorrhage. Whether this syndrome is accompanied or not by an anatomical lesion, in a great majority of instances the lesion is curable if one attacks the cause. Gelatin seems to be the only agent capable of rendering the plasticity of the blood normal, when administered in the dose of two hundred and twenty-five grains daily. It is a harmless drug and no contraindication to its use exists, and its administration should be prolonged."

The *Philadelphia Medical Journal* has this to say of adrenalin: "Generally speaking, adrenalin, when locally applied, is the most powerful astringent and hæmostatic known; also a very strong stimulant of the heart. It is non-irritating, non-poisonous, and non-cumulative so far as it has been observed. It is indicated in a condition produced by morphine and opium poisoning. It has produced good results in circulatory failure, in prevention of collapse of anæsthesia, and allied conditions. It is invaluable in carrying out bloodless operations in nose, ear, eye, and throat work. Out of a great number of operations in which it was used, in only a few instances was sloughing after operation reported. The length of time required to control bleeding depends upon its strength."

The following points I have culled from the report of the drug in the last number of the *International Clinics*.

Adrenalin is six hundred and twenty-five times more active than the fresh suprarenal gland. The adrenalin chloride rapidly produces ischæmia of mucous surfaces, and is employed in oral surgery for performing bloodless operations.

Internally in large doses, it causes dyspnœa, lowering of the sensibility, diminished reflexes, and loss of voluntary movements. According to Tarasmio, death takes place by the paralysis of the central nervous system in frogs, and by pulmonary œdema in mammals. In rabbits 0.02 adrenalin per kilogram was always fatal when administered subcutaneously, but never by the use of 0.002 grains (grams).

I have lately been experimenting with adrenalin in a small way. I have used it with good result to arrest the gingival hemorrhage which sometimes occurs in the removal of tartar from the necks of teeth and to check the bleeding which comes from the abrasion of the gums caused by the slipping of an instrument, sand-paper disks, emory wheels, etc., also in the removal of epulic tumors and after the extirpation of the pulp of a tooth.

I have had good results consequent upon the use of adrenalin in conjunction with cocaine in tooth extraction. I take a dram of the solution (1 to 1000), add a grain of cocaine (which gives about a two per cent. cocaine solution), and inject a few minims into the gum. The cocaine produces the usual local anæsthesia, and the bleeding in almost every case has been extremely slight, and in some cases there has been no bleeding at all.

Bartholow says of turpentine: "It is a serviceable cardiac stimulant when the action of the heart is weak and the arterial tension low. In passive hemorrhages we possess few agents more generally useful. The indications for its use are a general debility, relaxation of the vessels, and an impoverished condition of the blood. It need hardly be stated that active hemorrhage or a condition of plethora contraindicates the use of turpentine."

According to Garretson, "Depressing the action of the heart is under almost all circumstances a valuable means to arrest hemorrhage. To this end *veratrum viride* is always given with satisfaction. The dose is five drops for an adult, given in a tablespoonful of water. Conjoined with this, and in many instances quite capable of taking its place, is the hot foot-bath."

Dr. Arthur Masur, of Breslau, Silesia, advises the use of powdered charcoal after tooth extraction where the hemorrhage requires special attention. Copied from the Review on Current Literature in the *Dental Cosmos*, his *modus operandi* is as follows: "The alveolus, which is freely irrigated with pure water, is dusted with charcoal powder, and, to insure better adaptation of the charcoal to the bleeding capillaries, it can be packed into the alveolus by means of cotton." There is also another and very easy way of carrying the powder into the alveolus,—by means of a damp cotton tampon, which is made to take up the charcoal and is then introduced into the canal. The powder is allowed to remain two minutes in the alveolus, and is then washed out with a strong stream of water.

In cases in which it is desirable to leave a packing overnight, the use of iodoform gauze impregnated with charcoal is recommended, although the essayist states that he has never had to recur to this procedure, as he has always been able to arrest hemorrhage in these cases with the simple application of charcoal powder.

The action of the charcoal powder is supposed to be merely a physical one, the closing up of the openings in the capillaries with the charcoal granules. Incidentally, it is also stated, the charcoal

has the property of hastening the healing of the wound, and its union with the tissues of the wound is very intimate, as it takes a strong stream of water to dislodge it.

Dr. Spaark, in the *French Medical Journal*, advises a wash of five parts of water to one of chloroform to prevent hemorrhage after tooth extraction.

It is not necessary to consider the long list of hæmostatics, as alum, ergot, tannin, etc., but I will say that I do not advise the use of styptic iron or strong solutions of nitrate of silver as hæmostatics in the mouth; in fact, I decidedly object to them both, because of the danger of sloughing and secondary hemorrhage with an enlarged bleeding surface. Nitrate of silver destroys tissue and causes much inflammation to the mucous membrane, and styptic iron makes an objectionable stain which is difficult to eradicate.

For persistent hemorrhage I do recommend, when simpler remedies fail, a sharpened stick of lunar caustic *once* applied as an actual cautery to the bleeding sockets of extracted teeth.

In treating hemorrhage after tooth extraction, my method is this: I have the patient rinse his mouth with an antiseptic solution. I then syringe the bleeding sockets in which the teeth were with pure peroxide of hydrogen or dioxygen, then follow with an antiseptic solution. This stops the hemorrhage, but should it recur I repeat the above, and then apply as an actual cautery a sharpened stick of lunar caustic run down very carefully into the very bottom of each socket, then pack tightly with antiseptic cotton held in place with a compress. The peroxide of hydrogen or dioxygen dissolves more thoroughly the clots from the mouths of the vessels, gives oxygen to the blood, and stimulates the muscular contraction, and nature is allowed to assist itself.

When it is necessary to use an anæsthetic in operating in the oral cavity, chloroform should be chosen (unless contraindicated); as it is not a heart stimulant, it does not increase the blood-pressure, and so adds nothing to the liability to hemorrhage.

During the anæsthesia of the patient, care should be taken not to allow any blood to get into the lungs by way of the trachea, or pneumonia will follow. (Necessary precautions against asphyxiation will of course be taken.) This can be prevented by the Trendelenburg position (from Wm. L. Rodman, A.M., M.D.), the use of the saliva ejector, and judicious sponging with hot water or ice-water.

Of the many operations that are performed in the oral cavity for correcting congenital deformities, for hypertrophy of the gums, for affections of the tongue, the hard and soft palate, extirpation of cysts, tumors, and malignant growths, clipping the uvula, and operations on the tonsils, none are more common than the last named. The following comprehensive definition is given by Dr. Richard Faulkner: "The term 'tonsil' is now applied to various collections of lymphoid glands situated at the oropharyngeal orifice, the anal orifice, and at points throughout the alimentary tract." We have to consider only the oral tonsils. "It is now agreed that they are absorbent glands of lymphoid structure, their chief function being the generation of lymph-cells or leucocytes," which "escape through the surface epithelium of the tonsil into the free cavity of the pharynx, where they destroy micro-organisms and other deleterious agents."

In operating on the tonsils there is usually considerable bleeding, as they are very vascular bodies, deriving their blood-supply from the tonsillar and palatine branches of the facial artery, the descending palatine branch of the internal maxillary, and the ascending pharyngeal. Usually the hemorrhage can be controlled. Fatalities from hemorrhage after amygdalotomy have been caused most often from hæmophilia, or accidental injury to the adjoining larger vessels. Although the internal carotid is situated about three-fourths of an inch back, cases have been recorded where it has been punctured. Brocha reports a fatal case due to an anomaly on this vessel.

Some of our New Orleans fraternity will remember an operation performed here by Dr. Bemis several years ago for abscess of the tonsil. He opened the abscess with a bistoury, and the man went home. After several hours there was a gush of blood. Dr. Bemis was visiting patients and could not be found, and the man bled to death. At the post-mortem examination it was found that the abscess had disintegrated the walls of the carotid artery, and when the pressure exerted by the pus was relieved the walls of the vessel gave way.

The treatment for controlling hemorrhage after extirpation of the tonsils is ligating the larger vessels, where necessary, compression, and styptics. Antipyrin is a favorite hæmostatic in tonsillar surgery.

Dr. Frank Washburn says, "Anæmia is no doubt a causative

factor in bleeding after throat operations, as may also be incomplete removal of the adenoids, the wounding of the faucial pillars, reaction after cocaine anæsthesia, etc.”

Two cases of severe hemorrhage after the operation of removal of the tonsils are quoted in the last quarterly of the *International Clinics*, one a fatal case, a hæmophilic child, reported by Stewart. I will quote the article exactly for the other case.

Escat reports recovery by operation in a severe case of hemorrhage after amygdalotomy where gargling with cold water, tamponing, using the galvanic cautery, ice, and hæmostatics failed. Record's compressor arrested it, but the pain was so great it had to be removed. The method of Baum was then tried with success. With a needle-holder, used in staphylorrhaphy, he passed a large curved needle and silk thread through the anterior and posterior pillars of the fauces, and tied the suture. This not being sufficient, he tied another two centimetres below. The cavity left by the removal of the tonsil was closed, but the hemorrhage continued. Gelatin was injected into the cavity without result. A cylindrical tampon of cotton roll of the size of his little finger was then carried by a nasopharyngeal forceps from above the upper suture into the cavity and downward until it appeared below the lower suture. The hemorrhage was stopped at the end of twenty-four hours, sutures and tampon removed. The cotton may be previously moistened with adrenalin (1 to 5000), hydrogen peroxide, antipyrin (ten per cent.), or ferropyrin (two per cent.).

THE FIRST MEN TO PRACTISE DENTISTRY IN BOSTON.¹

BY ADELBERT FERNALD, D.M.D., BOSTON, MASS.

MR. PRESIDENT AND GENTLEMEN,—The subject which I have selected for this evening is one which, in order to make it interesting and instructive to you, requires more time and study than I have been able to give to it.

Many of you here to-night may not care to know what the den-

¹ Read before the Harvard Odontological Society, December 18, 1902.

tists did one hundred years ago, but would much prefer to hear what is being done to-day.

In order to understand and appreciate the great advancement in art and science in any line, it is necessary that we know something about its history. We can then make comparisons and can see at a glance where the improvement lies; and what, may I ask, has made any more advancement, what standard has been raised any higher than the dental profession? When we stop and think of Wells, of Morton, and what they did to relieve suffering humanity, to say nothing about numerous other men, we may feel proud that we are dentists and have had such men in our calling.

The dental profession has done much—it will do more. The more we know about its history and the hardships of the first men to practise, the more inspired we shall all be, and strive to lift our standard higher.

It is not my intention to-night to give a complete history of the beginning of dentistry in this country, but simply to read and show you a few things which I am in hopes will throw “a side-light on it.” Dentistry had its beginning right here in Boston.

The earliest record we have of dentistry in this country is in 1636, when three barber-surgeons came to Boston from London. The name of one only, William Dinley, is known.¹ In 1639 a Roxbury man suffering from toothache sent for him to come and extract the tooth. He started on his mission of mercy accompanied by a maid who brought the message. They were overtaken by a violent snowstorm, lost their way, and were found some days after, frozen and dead. His misfortune has preserved his name to posterity. Madam Dinley shortly after gave birth to a son, who was named Fathergone Dinley.²

A New York paper, published in 1766, contains this advertisement: “James Daniel, wigmaker and hair-dresser, also operator upon the teeth.”³

The next man that I have any record of is Mr. John Baker, surgeon-dentist from England, of whom little is known. He instructed Paul Revere in dentistry, and in May, 1768, he moved to New York, turning his practice over to Revere.

¹ Memorial History of Boston, Justin Winsor, 1881, vol. i. p. 502.

² Annals of New York City and State, John F. Watson, 1846, p. 281.

³ Trueman's Dental Science in the United States.

Born January 1, 1735, Paul Revere was, at this date, 1768, a young man beginning to make his reputation as engraver and still following his trade as a goldsmith. He then took up the method of replacing lost teeth by artificial ones. An expert worker in gold and silver, he could easily turn his skill to dental art. There is now in the Art Museum a silver tea-set made by Paul Revere which, I am afraid, no dentist to-day would or could duplicate. The following is one of his dental advertisements:

“He flatters himself that from the experience he has had these two years (in which time he has fixed some hundreds of teeth) that he can fix them as well as any Surgeon Dentist who ever came from London. He fixes them in such a manner that they are not only an ornament but of real use in Speaking and Eating: He cleanses the Teeth and will wait on any Gentleman or Lady at their Lodgings, he may be spoke with at his shop opposite Dr. Clark’s.”

His artificial teeth are said to have been carved from ivory and fastened with gold wire. There is no evidence to show that he filled cavities. After the evacuation of Boston by the British, in March, 1776, the friends of General Warren were informed where the latter had been buried in the grave with a person “with a frock on.” Identification was rendered doubly certain by Colonel Revere, who set the artificial tooth and who recollected the wire he used in fastening it.¹ Paul Revere died in Boston, May 10, 1818.

“In 1650 Nathaniel Greenwood came to Boston from Norwich, England, and engaged in business as a ship-carpenter. He died in 1685, leaving two sons, Samuel and Isaac. The latter became the first professor of mathematics at Harvard College, and was the father of Isaac, Jr., whose name is first brought to notice in a newspaper account of the Boston Massacre, March 5, 1770. He is there described as an ivory turner, ‘a business naturally embracing that of a dentist.’ He is said by Dr. C. A. Harris to have been the ‘first practical dentist in Boston.’”²

I have here the *Massachusetts Sentinel*, published in Boston, 1789, which contains Isaac Greenwood’s advertisement, which I will pass around.

“He practised in Boston about twenty years. He had five sons; three of them became dentists. Two, John and his younger brother Wil-

¹ Psi Omega Dental Journal, Boston, 1897, vol. i. p. 14.

² Trueman’s Dental Science in the United States.

liam Pitt, will ever be remembered for their good work, John becoming dentist to President Washington. William Pitt Greenwood was an ivory turner, and after studying for a short time in New York with his brother John, he returned to Salem and practised as a dentist in 1790; later he came to Boston and practised in this city until disabled by old age. He died in Boston, 10th of May, 1851, at the age of 85. Dr. William Pitt Greenwood was very skilful in carving bone teeth; he had a good reputation, and enjoyed a large practice. In 1840 he received an honorary degree of D.D.S., from the Baltimore Dental College."

Before I say anything more about dental science, I wish to call your attention to Boston at this time. I have here a reproduction, which I will pass around, of Tremont, Winter, and School Streets, where some of the early dentists had their offices. In 1790 the population of Boston was eighteen thousand. There were twenty-three physicians and three or four dentists. The law at this time was very severe, a woman being hung for stealing a bonnet valued at five shillings. On Colonnade Row, now Tremont Street, Dr. John T. Codman's father saw a man in the pillory, with hands, head, and feet yoked, and the boys pelting him with rotten eggs. If a man was poor and could not pay his debts, he was not allowed to live within the town limits, but could live outside of the limits, and if caught inside, no matter in what peaceful pursuit engaged, could be lodged in jail and kept there until his debts were paid. However, any man could practise dentistry if he could get any one for a patient. One of the early dentists¹ says "that when he began practising the word *dentist* was hardly heard." Some men made teeth for themselves. Mr. L. Pool (whose brother invented Pool's index system) told me that his father carved for himself, from a whale's tooth, set after set as he needed them. When Dr. John T. Codman was a young man² the boys here in Boston went to the constable, a Mr. Clapp, to have their teeth extracted. When a man wished to become a dentist a hundred years ago he did not have a dental school to go to. Books on the subject were few and very hard to obtain. Those who were practising were careful to keep all they had. One could not obtain any information from them without paying a large sum. Sometimes a man would be taken into an

¹ Extracts from Dr. John T. Codman's address before the American Academy of Dental Science, November 13, 1889.

² William P. Greenwood, *American Journal of Dental Science*, vol. iii. p. 77.

office for one thousand dollars¹ and taught mechanical dentistry, as that, to a limited extent, was all that was done. Most all instruments were made, perhaps, in a blacksmith's shop, roughly, to be sure, but still much was accomplished. By learning to make such instruments or appliances as were needed, they became used to doing fine mechanical work.

The *Boston Gazette*, December 22, 1777, contains this advertisement: "A few surgical and dental instruments for sale. The lowest price for same two hundred and eighty continental dollars."

Many of the first men were skilful in the use of tools, such as carpenters, machinists, and jewellers, the latter being skilful in working gold and silver and in doing fine soldering. A great many tools they used in their work were just what was needed in dental work, such as pliers, drills, saws, files, and polishing implements. At this time a man was greatly handicapped if he wished to take up dentistry unless he had some experience in the jewelry line.

I find in the *Massachusetts Spy*, January, 1773, the advertisement of Daniel Scott, a Boston dentist, and in the *Massachusetts Gazette*, January 27, 1774, the following:

"Dr. Spencer, dentist, Temple St. Teeth extracted after an easier method than hitherto practised."

The first Boston directory published, 1789, gives the names of three dentists, — John Templeton, Isaac Greenwood, and Josiah Flagg. I find in the *Sentinel*, September 20, 1786, and May 27, 1789, John Templeton, Dentist, advertises to pay cash for live teeth to any person who would part with them. About this time M. Le Mayeur, a dentist, advertises in a Philadelphia paper, 1784, to give two guineas, or about ten dollars, each for sound teeth to those who would sell them. The *Columbian Sentinel*, 1790–91, contains these advertisements which, I presume, are father and son:

"Josiah Flagg, Sr., a jeweller, try me, prove me, hold fast that which is good. Josiah Flagg, Jr., Surgeon Dentist, has the honor to acquaint the ladies and gentlemen of the metropolis and vicinity that he has removed from Milk St. and taken the stone house of Mr. J. Allen's, the second house on the right hand going up Beacon St. from the Stone Chappel where he has every convenience for his practice. He alleviates the most acute pain without the use of instruments. Stops hæmorrhage arising from any cause whatever. Cleans the teeth and gums, restoring

¹ History of Dental and Oral Science in America.

them free from future injury. Makes artificial teeth with and without roots. The former equally as serviceable as the natural ones. Practises the various branches of the dental art upon a new, much improved, highly recommended and, really safe method. Cash given for live teeth to no person but such as are in perfect health. The poor ye have always with you, they are cheerfully provided assistance gratis."

Josiah Flagg was born September 30, 1763. Of his early life but little is known. No doubt he inherited from his father his great mechanical skill and ingenuity. We know that he was patriotic, enlisting in the army when only eighteen. He became a major, and while the French and American armies were in winter quarters in Rhode Island, 1781-82, he had an opportunity to study dentistry under Joseph Lemarie, a French officer and surgeon. Serving until the close of war, he shortly began to practise as a dentist in Boston. In 1812, when this country was again in war, he enlisted in the navy, but was shortly captured and taken to England, where he was paroled. His reputation as a dentist introduced him to some of the noted surgeons of London. (In fact, he was received with much honor),¹ and is said to have assisted Sir Ashley Cooper at Guy's Hospital. By attending the lectures and associating with such men, he acquired great skill in operative as well as mechanical dentistry. And if he did the surgical operations which he advertised to do, such as sewing up harelips, he did what many of us to-day do not. He was one of the first to fill teeth with soft gold. So soon as the war was over he returned to this country, ready to give his friends and the public the benefit of his knowledge. His health failing soon after, he went to Charleston, S. C., where he died September 30, 1816.² We have records of two sons who were noted dentists,—Dr. J. F. Flagg (whom I will refer to later on) and Dr. J. F. B. Flagg, who practised in Philadelphia.

We think of dentistry at this time as being very limited, yet considerable was accomplished. Teeth were extracted, decay filed away, and cavities sometimes filled with lead-foil and other gummy substances. Soft gold was also used about this time, but tin not until 1822. Teeth were filled until one-fourth or even one-third was cut away. Not until 1822 do we find any objections to this practice. Josiah F. Flagg recommended using crooked knives and

¹ Dental News Letter, vol. vii. p. 212.

² Ibid.

sharp instruments. As late as 1836 Dr. Spooner used files to cut away decay, but did not separate sound teeth as did the earlier dentists. He says, "Do not file a tooth that can be better and more effectually treated by plugging." The art of filling teeth in 1789 was not practised to any great extent. Loose teeth were treated and cleaned. Very little regulating was done, and that mostly by extracting, although teeth were ligated to place in some cases. Benjamin James, in 1814, says, "Irregular teeth in young persons are to be pressed to place by the fingers." Most of the work was to replace teeth, when lost, by carving and with bone plates. Sometimes the plates were carved from a sea-horse's or a whale's tooth. They had no cement, no rubber dam, no engines, no vulcanite, no amalgam, no cohesive gold,—not even a match, friction matches not being invented until 1827,—no coal gas, no nitrous oxide, ether, or chloroform. Soldering was done by a spirit- or oil-lamp. When a plate was made, a section of bone or tooth was cut so as to have the enamel come in front of the carved tooth. Often the plate was carved first, and six or eight human teeth were attached in front by means of silver and gold screws or wooden pegs. Often the teeth were made of oxen's, horses', and cows' teeth, ivory, mother-of-pearl, and wood. Of all animal substances for artificial teeth, the human tooth was the best. I will give a brief description of how these plates were made. An impression was taken in wax, "wax being held at first by the fingers and a model was made with plaster of Paris," plaster being used for this purpose for ages. A piece of bone a little larger than the model was selected, the model painted or colored with a gummy preparation so as to leave a mark on the bone, then the spots were carved away, this being repeated until the whole surface of the bone became colored; then it was supposed to fit. Sometimes bone plates had the gums stained to give a more natural color. If it was a partial plate it was often ligated to place by silk cord, cat-gut, or platinum wire. If a whole set, spiral springs were attached. You will get a much better idea from these specimens, which I will pass around. On one of them pieces of the old cat-gut or fiddle-string still remains which held the block in place. For crowning a tooth at this time, "The fee was from \$3 to \$10."¹ These bone teeth or plates were not very durable, unsightly, discoloring very shortly after being put into

¹ Benjamin James.

the mouth, and were apt to decay. In 1795 Dr. John Greenwood, in a letter to his distinguished patient, George Washington, tells him to fill the cavities in his bone plates by drying the same and melting sealing wax into the cavities with a hot nail.

The Boston directory of 1804 contains the names of three dentists,—William Pitt Greenwood, Cold Lane; Josiah Flagg, Black Street; Thomas Parsons, 1 Winter Street.

In the *Columbian Sentinel*, February 9, 1805, we find the following:

“T. Parsons, Dentist, Respectfully informs the inhabitants of Boston and vicinity that he continues to practise in the line of his profession.”

John Randall, M.D., practitioner of medicine and dental surgery, was born in Stow, Middlesex County, in 1773; graduated at Harvard in class of 1802; studied medicine with the celebrated Dr. John Jeffries, of Boston, and commenced practice about the year 1805. During his collegiate course he found his own teeth beginning to decay, and sought relief of the best dentists of that day, who told him that his business was to put in new teeth, and declined any operation for the preservation of the natural ones. Dr. Randall commenced his first dental operations upon himself. While a pupil in medicine he performed many operations for his classmates. He never advertised; his modest announcement to the world was “Dr. John Randall.” Dr. Randall was very successful and popular. In extracting teeth he used the key, also the forceps, with great skill. He was scrupulously conscientious; he was decidedly conservative in his theory and practice of dental surgery. He knew the value of saving healthy roots for crowns; his success in engrafting teeth was very great. For nearly forty years he was a useful and honorable member of society, and bestowed much upon the poor and accumulated ample provision for his family. He died in 1843, aged seventy years.

Teeth were crowned by cutting off and burning out nerve, or, as Benjamin James says, “When the nerve is alive, to remove it take an instrument the size of a brown thread needle and carry into the natural canal of the root as far as it will go. The remainder of this operation will be free from pain.” Arsenic was not used for this purpose until 1836 by Dr. S. Spooner. Sometimes the crown was set with a gold or silver screw, often by a hickory post, in some cases cotton being wrapped around the pivot to make it stay in place.

Dr. Josiah Foster Flagg was born in Boston, January 10, 1788. When a small boy he showed great skill and enjoyment in work. When he was sixteen years of age he turned his attention to cabinet-making and shortly after developed a strong desire for study. Then he was sent to an academy at Pittsfield, Conn. He took up the study of medicine and surgery with Professor J. C. Warren, who very quickly discovered his genius and ability. After his graduation Dr. Flagg located as a practising physician and surgeon in Dover, N. H., and Uxbridge, Mass., remaining in each about two years. In 1819, the year after his marriage to Miss Mary Waite, Dr. Flagg removed to Boston, and gave his entire attention to dentistry. In 1830 he excelled all in the making of artificial teeth. When we consider the fact that he possessed great skill in the use of the knife as a dissector, and often constructed surgical instruments and anatomical preparations and methods for alleviating pain, and had frequently assisted his father in mechanical operations of dentistry, we can see how he might succeed. All this being known, it was quite sufficient at that time for the people of the community to put their trust and confidence in Dr. Flagg. And here, in Boston, with a large circle of patients and loyal friends he practised the profession for thirty-four years. Dr. Flagg contributed freely to the list of inventions and suggestions which have helped to relieve suffering humanity, among which were his wax or triangle splints for fractured limbs and a great variety of bone-forceps, which have now very much superseded the use of the saw in certain amputations, and in 1828 he invented forceps which were calculated to apply to every variety of teeth. Dr. Flagg was an artist of no mean ability, and founded the first school of design in this country. He died in Boston, July 20, 1854.

I have here some turnkeys which I will pass around. The key of Garengéot was invented in the early part of the eighteenth century for the extraction of teeth. It is an improvement on the ancient pelican. Since the time of Garengéot the key has undergone a number of changes. The first material improvement was made by Mr. Spence. It consisted of adding a projecting part at the end of the bolster, and through which the screw is passed. This addition was for the purpose of fixing a claw in an advanced position beyond the bolster, which was found extremely useful in the extraction of the wisdom-teeth. The round fulcrum and raised

shaft are improvements made by Mr. Savigny, and more recently Duval added the movable bolster, but none of the above improvements have contributed very materially to the value of the instrument except the round fulcrum. The key, notwithstanding all the improvements, has fallen into disuse and is superseded by the forceps. The forceps for extracting teeth was probably among the first, perhaps almost the only instrument employed for the extraction of teeth until the invention of the key by Garengot.

Oliver Wendell Holmes says, "There never was a claw on bird or beast that was the cause of such anguish of apprehension, such howls of agony, as that diabolical instrument, looking like a vulture's talon, but known as the key. It was a key indeed. It may have opened the door of heaven to the sufferer in due time, but while the bolt was turning the victim thought he was in that other place, where the man must be who invented the instrument of torture."¹

Those of you who have had the pleasure of seeing Dr. Fillebrown extract with the key know that in his hands, in selected cases, it is an efficient instrument.

One of the early writers says, "When teeth bleed too freely after extraction a little lint is pressed into the socket and a cushion of rags is crowded into the space on which the patient is instructed to bite."²

I have here some impression trays which look as if they had seen service, and no doubt are hand-made.

Dr. Samuel A. Bemis, 32 School Street, was practising as early as 1819. I have not been able to find much about him. He was one of the first to fill root-canals in this country.

We now come to a man who has certainly earned the high place in his profession which he holds. Nathaniel Cooley Keep was born in Longmeadow, Mass., December 23, 1800. He probably inherited his mechanical skill from his father, Samuel Keep, who had great ingenuity, and very often would do with his own hands operations of the wheelwright, blacksmith, and carpenter. From childhood his career seemed to be marked out for a mechanical pursuit on account of his skill in the use of tools, and at the age of fifteen, with the limited education of a village school, he went to Newark,

¹ O. W. Holmes, *The Claims of Dentistry*.

² Benjamin James.

N. J., where he was apprenticed to John Taylor, a manufacturing jeweller. But after five years' apprenticeship he returned to Longmeadow with the determination to go to Boston and give his time and energy to dentistry. His years of apprenticeship in Newark had afforded him good training. He was often obliged to make his own tools and to discover for himself the best way of performing many delicate and difficult tasks. His practical experience in working with metals which he had obtained in the jewelry business was a great help to him. Dr. Keep early recognized the truth that a general acquaintance with medical science was necessary in order to reach a high eminence in dentistry, and under this conviction he attended the regular course of lectures at Harvard Medical College, and at the same time kept up his practice of dentistry. He took his medical degree in 1827. The practical training of his professional work was received from Dr. John Randall, of Boston, who, as was common in those days, united some practice of dentistry with the general practice of a physician.

During Dr. Keep's many years of practice there was nothing narrow or exclusive in his course respecting the progress of his art, as there was nothing ungenerous in his character. His spirit in this respect is well expressed in the following extract from an address delivered by him before the Massachusetts Dental Society, of which he was the first president, on "The Aims and Duties of the Dental Profession," and published in 1865. He said, "We owe it to ourselves to make ours a liberal profession. Without enumerating all that such a profession comprises, we may safely say that it requires those of its members, who have through their own efforts, or the teachings of those who have preceded them, made improvements in dental science to perpetuate these improvements for the benefit of succeeding generations, and under no circumstances whatever to desire or even consent that their discoveries shall live and die with themselves."

It was largely through Dr. Keep's efforts that the Dental School of Harvard University was established in 1868. Its aim was declared to be "to raise the standard of dental education by giving thorough instruction in all branches of science and art required by the dental practitioner." The connection of this school with the university furnished the profession a guarantee that its standard would be high, as it must necessarily be to keep pace with the other departments. Dr. Keep was dean of the first faculty.

They treated over one thousand patients there during the first year. In 1870 Dr. Keep received the honorary degree of Doctor of Dental Medicine from Harvard College. As most of you are familiar with the noted Parkman and Webster murder trial, in which Dr. Keep was the principal witness, I will only mention it here. His life was given to relieve human suffering. He contributed much aid in building up a liberal profession, and, at peace with all, his useful life was closed on the 11th of March, 1875. I have here a beautiful specimen of Dr. Keep's work, a set of carved teeth.

I will now show you a set of ivory points designed by the late Dr. G. T. Moffatt. I have been told that they were made to insert gold fillings. Here is a steel instrument which he designed for finishing gold fillings.

Daniel Harwood, M.D., who was born in Barre, Mass., March 21, 1801, determined very young in life to make the profession and practice of medicine his study and effort. He commenced to practise in Northampton, Mass., and afterwards he entered the Medical School at Brunswick College, where he graduated. He made dentistry his specialty, and settled for a short time in Portland, Me., where he was associated with Dr. Prentiss. In 1829 he came to Boston, where he located permanently, and was associated with Dr. Lane, then with Dr. Josiah Tucker.

In a short time Dr. Harwood's practice was larger than he could personally attend to. In fact, he is said to have reached the highest professional standing at that time. After 1873 he gradually retired from the active duties of his profession, and for the last six years before his death, which occurred in October, 1881, he gave no time to it. The marked characteristics of Dr. Harwood were energy of purpose, perseverance, and strict integrity.

Let me now call your attention to Dr. Joshua Tucker, who was born in Winchendon, Mass., August 7, 1800. Here he spent his boyhood days, and at the age of eighteen he went in business. But in the course of a few years he turned his attention to dentistry. He commenced his study with Dr. D. C. Ambler, of Columbia, S. C., and later went with C. Starr Brewster, of Charleston, meanwhile attending lectures at the South Carolina Medical College. He completed his studies here, then went to Havana, Cuba, where he practised his profession until driven away several years

later by yellow fever. In 1833 he came to Boston, and was associated with Dr. Daniel Harwood, and the name of Harwood & Tucker soon became well-known both in this country and in Europe. Always cheerful, happy, and good-natured, he naturally had a long chain of faithful and admiring friends, to whom he was strongly attached, until death came, at the age of eighty-one years and three months. He had been a member of the Massachusetts Medical Society since 1838, and was president and honorary member of several professional societies, one of which was the Odontological Society of Great Britain.

I will pass around some more instruments which may prove interesting to some.

This porcelain artificial nose, made by Willard Codman fifty-five or sixty years ago, is a duplicate of a practical case. I think if you study it a minute you will see that some of these early dentists did artistic work.

Dr. Alonzo F. Preston, who has practised dentistry in Boston for sixty-five years, and is now about ninety-two years of age, has kindly given me much data for this article. He says that when he began dental work he was a jeweller, and at that time there were only four or five other men practising the profession in Boston,—Drs. Bemis, Harwood, N. C. Keep, and Tucker.

When a patient came into Dr. Preston's office, he would examine the teeth and see what there was to be done, then give another appointment, and in the mean time he would make such instruments as were necessary to do the operation.

I will pass around the first two instruments made and used by him, also some of the last he made. I have here a gold bridge which he made in 1839, which the patient wore nine years.

Dr. Preston said that previous to 1827 he could not get his own front teeth filled in Boston. The operation at that time was not considered practical.

In closing, I wish to say that if I have made any errors in compiling this article I shall be glad to have them corrected. I have tried to give you a few facts, although they are disconnected. If anything I have said has interested you so that you will "observe, compare, reflect, record," it will give me great pleasure.

Gentlemen, I thank you for your attention.

IS THE REALIZATION OF REASONABLE IDEALS IN DENTAL EDUCATION NEAR AT HAND?¹

BY CHAS. C. CHITTENDEN, D.D.S., MADISON, WIS.

REASONABLE ideals in dental education would seem to be defined by those standards as yet unattained and not yet in practical working, but which are admittedly possible and desirable in the estimation of the leading dental teachers, practitioners, and examiners of this and foreign countries, as expressed and promulgated by them personally and in the councils of the great national and international organizations. In no other country in the world is dentistry esteemed so truly a separate and distinct science and profession as in the United States of America.

Most of our schools are independent of and free from domination by the medical profession and medical schools, which is a condition not at all to be found in the schools of Europe, where our beloved profession is held as a mechanical art tacked on to a background of medical didactics.

Every enthusiastic lover of his profession probably has formed an ideal for himself, or for some one in whom he is interested, which should represent the summing up of his dream of educational perfection in dentistry, but the chief difficulty in the way of the general adoption of these ideals is that they are as various as they are ideal. One man will urge that an academic degree is of main importance, preparatory to the study of dentistry at all, while another will insist that beyond the simplest of common school preparation the wisest educational prerequisite for dental college is found in a term of pupilage in the office of a successful practitioner, where the study of text-books is a mere incident and the education is conducted on the principle carried out by the celebrated Mr. Squeers at Do-the-boys Hall, England; *i.e.*, teaching spelling as follows: "W-i-n, win, d-e-r, der, winder. Go and wash it."

And then there are all the intervening ideals that can be thought of, as wide in variation of detail and almost as numerous as the *personnel* composing the dental profession, and it will not be

¹ Abstract of a paper read before the American Medical Association, Section on Stomatology, New Orleans, May 5 to 8, 1903.

denied that there is fully as great a percentage of dreamers, cranks, and would-be prophets and leaders among us as is to be found in any other calling. It is out of the multitude of counsel, based on actual experience and effort, that reasonable standards can be evolved. The educators and examiners have been each and all striving for wise standards that will fill the educational ideals for some years to come, and also be practicable and attainable as a general fair minimum requirement by all educational institutions worthy the name. The dental literature for the past several years has overwhelmingly pointed to high school graduation and four years of special dental training as the minimum place where standards could be with safety set up and permanently established. The variations in standards for high schools in different portions of our country are great. Indeed, in some States having dental schools there is practically no established high school worthy the name. But, like all other commodities, schools accommodate their curriculum to the demand, and, at any rate, equivalents can be easily and fairly set up through the system of preliminary examination now in operation under the rules of the two National Associations of Faculties and Examiners, so that the decision as to what is a reasonable requirement in high school graduation can be very easily attained. And even where there are elective high school courses to be had, it is but a matter of detail to elect and maintain a reasonable equivalent. The college course has for several years been advanced to three years for graduation, and the addition of the fourth year to the curriculum, which is to be inaugurated in the present year in all our schools, completes what may be properly denominated reasonable ideals in dental educational standards.

If all the schools composing the National Association of Dental Faculties were departments of properly endowed universities, and thus relieved of the everlasting commercial handicap, there would be no question as to the immediate establishment of reasonable ideals. But the fact obtains that a large majority of them are practically struggling for existence and feel they cannot be too particular in their standards.

Having fairly determined what should be demanded and established in standards, the question arises, Who shall establish and be responsible for the carrying out of these standards? The answer is, The colleges, through their national associations, and the examiners, standing behind, protecting, insisting, and encouraging

by the official authority that is in them vested. This being accepted as the proper method, all obstacles that beset the path and intercept the attainment of the goal must be squarely faced, with the view to most directly overcome them or pass around them in the onward course. The men to be convinced and enlisted and the means, the employment of which will most likely and directly conduce to the ends sought, are important. What is the power that must be invoked?

For over forty years dental schools have been pursuing their steady growth in size of classes and in numbers without there having been set up a single fixed minimum educational requirement for beginning a school course that could be in any sense claimed to be an established prerequisite. The demand for skilled practitioners was so great during the period of phenomenal growth and development of this great country following the close of the Civil War that perhaps it was as well that this should have been so, but to-day the demand is not so much for mere artisans as for educated, scientific, professional,—gentlemen, if you please,—who shall be competent to take the helm and guide the destinies of a great profession that is more nearly an exact science than any other, except it be perhaps the law.

Attempts at the raising of requirements have been continuous, and the past five years have seen the establishment of two years' high school preparation, and the present year inaugurates the four years' course.

The universities have been held back for years, hoping by slowly raising the educational requirements to enable the weaker schools to keep pace and so hold the national body together. It would seem that this has proved a mistaken policy, for the proceedings of the national association of colleges are filled with charges and trials, convictions and fines, against school after school for the violation of the plain rules of the body as regards the receiving and giving standing to students taken into their classes, with no other earthly object apparent than to swell the income of the struggling institutions. This is, of course, human nature, but it is none the less scandalous, notorious, and disreputable in the highest degree, and should be branded with the condemnation of the profession at large.

A case in point of what is constantly going forward in the effort to swell classes at whatever risk (and the half of which is

never brought to light) is that of an endowed university which was compelled to refuse admittance to its classes the present year to about thirty matriculants because they did not possess the prerequisite education for admission to the third year of high school, as required by the rules of the two National Associations. These men applied elsewhere, and most of them, it is believed, are now enrolled in the classes of other schools belonging to the Association.

Another instance is where one school sought (and did in some degree succeed in its undertaking) to swell its own classes by sending out emissaries, cappers, or steerers, offering in wholesale lots to almost the entire classes of a competing school reduced tuition rates varying from \$25 to \$65 for the \$115 advertised tuition fees.

Another instance of flagrant attempts on the part of schools in the full membership in the National Association of Dental Faculties to evade the rules is where one of them, by the admission of its dean, has taken into its Freshman Class for regular work a number of matriculants who had signally failed to pass the preliminary examination (set up by the National Association as its minimum standard for admission to classes) before the duly accredited appointee of the State Superintendent of Public Instruction, and then attempting to build up some sort of excuse for its conduct by not only attacking the educational fitness of the examiner,—who, by the way, is the honored principal of a district school in a large and flourishing Northern city,—but also by attacking publicly his character as an honest man and public servant, and thus attempting to excuse itself for having these men in its classes at all, even under the name of “specials” and “in our preparatory classes, besides doing regular freshman work.” And this school is evidently banking on being able to control enough “influence” in the National Association to cover up or else explain away its conduct, or, at the most, escape with a “fine,” as though payment of money could in any sense atone for the violation of the law of common honesty.

There is also the lamentable spectacle of schools posing as the very “ideal” of everything desirable, and whose official heads are shocked and hurt at the mere suggestion that any one should presume to criticise them or question their reputability, that are constantly and persistently flooding the secular press of the country with paid pictorial advertisements of their classes, foot-ball teams, handsome, noted, and extra-skilled teachers and instructors, ex-

ploiting the peculiar advantages of the institution and its professors over all competitors,—all done in a style to put to the blush the common advertisers of the cheap “dental parlors” type.

Such things unchallenged and unrebuked certainly do not tend to the realization of ideals, and most certainly do not offer incentives to enter our profession to the class of young men our profession most lacks. This is the sort of thing which has always stood in the way of the proper establishment and maintenance of ideal standards.

It is futile for this body, composed of the membership of the “reputable” colleges of this country, to adopt for the government and conduct of its members certain rules and standards and methods of procedure based upon high ideals of ethics and mutual protection, to be accepted by the profession at large as a criterion of the schools’ reputability, and then devote a large part of its annual sessions to inventing excuses and apologies for flagrant and open violation of the letter or spirit, or both, of these standards and rules, thus giving to the outside world the very reasonable impression that the body is dominated by anything but the real spirit of building up ideals that their rules and standards would indicate. It is high time that the College Association awaken to a few realities of the situation. There is at this time, as a result of years of struggle and contention between schools and the examiners for the establishment of specific standards, accepted by the schools and made by the boards their measure of reputability,—there is now I say, a period of mutual accord and trust and peace between these bodies, which should be the harbinger of better things to come. The schools are assured of protection by the boards from any infringement and violation by competing schools, made and provided that the College Association will purge itself of the violators and enforce its own rules without fear or favor.

In order that ideals may be sooner and more surely established and maintained the boards of examiners, with all fairness and reasonable consideration for the interests of honest educational efforts, must nevertheless be mindful of their official oath to carry out not only the letter, but also the spirit and intent of the law for the protection of the public. They must in the National Association stand squarely together on reasonable requirements, and, more than all else, have the courage of their convictions in passing on the character of the colleges and their output, constantly having

in mind that the goddess Justice does not close one eye and blink the other when on duty.

If the schools will rise to the occasion and set the pace, the examiners will most assuredly help and sustain them in holding it steadily up. If the National Association of Dental Faculties will not purge itself and be honest in enforcing its rules, there will be but one way to move the profession forward,—to wit, the better and honest schools will naturally unite themselves together, and the examiners must join them in a newer and higher emprise on a surer and it is to be hoped better-laid foundation.

RECOGNITION OF THE D.D.S. DEGREE BY THE AMERICAN MEDICAL ASSOCIATION.

BY EUGENE S. TALBOT, M.D., D.D.S.

It will be of interest to the dental profession to know that the American Medical Association has recognized the degree of D.D.S. One object of establishment of the Section on Stomatology in the American Medical Association was to try to place dentistry on an equal standard with other specialties in medicine. The members of the Section have labored many years with this idea for a goal. Members of the Association have been the warmest friends from the beginning.

The members of the Section have as their battle-cry, "By their works ye shall know them," and for each meeting a programme has been prepared far above the average dental society programme. Subjects have always been chosen of mutual interest to physicians and dentists to the exclusion of dental technique, since there are many dental societies in which subjects pertaining to dentistry proper are discussed.

When the Section was first organized only those holding the M.D. degree could become members; later, in June, 1887, Dr. N. S. Davis, Dr. W. W. Allport, and myself drew up the following:

"*Resolved*, That the regular graduate of such dental and oral schools and colleges as require of their students a standard of preliminary or general education and a term of professional study equal to the best class of the medical colleges of this country and embrace in their curriculum

all the fundamental branches of medicine, differing by substituting practical and clinical instruction in dental and oral medicine and surgery, be recognized as members of the regular profession of medicine and eligible to membership in this Association, on the same conditions and subject to the same regulations as other members."

While this practically recognized the D.D.S. degree, yet the wording of this resolution was so ambiguous that every year the officers of the Section had more or less trouble in admitting members. Thus, at Denver, for some reason unknown to the writer, an edict was issued before the meeting that only those holding the M.D. degree could become members, and some thirty members were lost to the Association. This was unintentional, as it was admitted by the secretary and treasurer after the meeting to have been a mistake.

The Section drifted along under the resolution until 1901, when a new constitution and by-laws were adopted which placed our Section to a greater disadvantage. In the mean time the Section, by the character of its papers and discussions, had placed itself upon an equal standard with other Sections. Nay, more, it has in some respects far superseded the other Sections. The Section on Stomatology has been frequently cited in the past ten years as a model by which other Sections, to be successful, might copy, as witness the following remarks by President Billings at New Orleans: "One of the best conducted Sections of the Association is that on Stomatology. Its efficient secretary has served continuously for sixteen years. This Section is threatened with annihilation since the plan for reorganization was adopted. This should be obviated by the adoption of the by-law proposed last year, which would enable the reputable dentists who have the degree of D.D.S. to become associate members of the Association."

Noticing the predicament and recognizing the high standard of the work of the Section on Stomatology, the Association came to the rescue and passed the following resolution through the House of Delegates:

"DENTAL MEMBERS.

"Dentists who hold the degree of D.D.S. from a reputable dental college and who are members of a recognized local or State dental society may be admitted as dental members on recommendation of the officers of the Section on Stomatology and approval by a majority vote of the Section, the names of such members to be sent to the secretary by the secretary of the Section.

"BY-LAW.

"Dental members shall enjoy the same privileges as regular members and be subject to the same conditions."

It will be seen that not only is the graduate of dentistry placed on an equal standard with the graduate of medicine, but the Association has given the Section on Stomatology great privileges as well. It has given it its own autonomy. This relieves the officers of the general body as well as those of the Section of some of the annoyance which naturally occurred under the old *régime*. The D.D.S. pays his five dollars and receives the weekly journal of the Association, which every practitioner of dentistry or medicine should take. It has been claimed by some dentists that the medical profession has been hostile to dentistry. While it is possible that such may be the case in certain localities and individuals, it is not true of the members of the American Medical Association. When the Section was established at Richmond, Va., in 1881, Drs. Samuel D. Gross, of Philadelphia, Sayre, of New York, N. S. Davis, of Chicago, and Toner, of Washington, were heartily in sympathy with the movement, and took active interest in its welfare from the start. Later, Dr. Marcy, of Boston, not only worked for its interest, but read papers before the Section. It is a well-known fact that these men are all ex-presidents of the Association. The dental profession has no better champions than the present temporary and permanent officers of the Association.

The secretaries from the start have always stood by the Section on Stomatology. Dr. Simmons, the present permanent secretary, has championed our cause throughout the present trouble. He is a warm friend of the Section and always speaks in the highest terms of our work.

I think it safe to say there is not a member in the Association who would not gladly read a paper before our Section upon invitation. We have had many such papers in the past. There has never been the slightest distinction made between the Sections. The Section on Stomatology has as much influence as any other Section.

It has been the aim of the Section to elevate the standard of dental education, and its influence has been felt in universities in the advancement of their years of study, preliminary education, groundwork in medical principles, in the passing of the

Army Medical Bill, and in the establishment of the Army Dental Corps.

Our numbers have not been large as compared with other national bodies. As compared with other Sections in the national body, with the exception of possibly three, we stand very favorably. There is one great advantage, however, in this: when one reads a paper before the Section on Stomatology, upon any subject, he is sure of an appreciative audience. Every person in the room is capable of discussing these papers to the fullest extent.

WHAT IS THE MEANING OF CONSERVATISM IN DENTAL PRACTICE?

BY C. EDMUND KELLS, JR., D.D.S., NEW ORLEANS, LA.

THE March issue of the INTERNATIONAL DENTAL JOURNAL contains a paper by Dr. J. G. Palmer, of New York, which was read before the Academy of Stomatology in October last, and the title of which was "Conservatism *versus* Radicalism in Certain Dental Operations."

A perusal of this article leads one to ask, What is the meaning of the term "conservatism" in dental practice? Does it mean to everlastingly adhere to methods once adopted and never to change? And what should be the proper interpretation of the word "radicalism"? Is it changing from *original methods*?

These are evidently the essayist's interpretations of these words, but I challenge their accuracy. If such were universally accepted, which fortunately is not so, the end of all improvement would be at hand.

I hold that "conservatism" means the adoption of apparently questionable new methods which differ radically from the old, in favorable cases which are expected to be under the control of the operator and the results of which may be observed. Once this period of probation is satisfactorily passed, the radical operation is such no longer, but becomes an accepted method and should always be practised in a conservative manner.

"Radicalism," to me, means the adoption of an entirely new operation or method, entirely upon the "say so" of some one else,

and performing said operation at every opportunity, practically without regard to consequences.

A most beautiful illustration of this differentiation was demonstrated by the introduction of the operation of implantation by Dr. Younger. For a year or two after his discovery, at numerous dental conventions, many operators of the *bona fide* "radical kind" gave clinics of implantation, performing the operation without any idea of conservatism, and most of them probably making a clean score of one hundred per cent. of failures.

The conservative operators selected their cases, which were few and far between, observed the causes of the failures of others, as well as their own, and met with success sufficient to warrant the operation being a conservative one in their hands to-day, and one which nothing else has replaced.

The following is a quotation in the paper in question:

"We have sometimes failed in accomplishing what another has claimed to be an easy matter, because that one has omitted from his description some detail which he took for granted we were conversant with." And now I will quote from the essayist: "There are those who earnestly advocate what they term immediate root-filling. This, as I understand it, means that a devitalized tooth is opened, cleaned, sterilized, and filled at one sitting."

Here, in these two sentences, is the key-note to the whole situation, and accounts for the essayist's acknowledgment that his experience in immediate root-filling has been "unfortunate," as he expresses it. In the first sentence the failure in an operation is attributed to the assumption of knowledge of some unmentioned detail; and in the second, the sequence of the necessary steps for the successful practice of immediate root-filling is given as opening, cleaning, sterilizing, and filling. Mind you, how particular each step is emphasized, *open, clean, sterilize, and fill*. Well, those of you who have never practised the "radical" operation of immediate root-filling, follow those instructions to the letter, and likewise will your experience be "unfortunate," for the most important "detail" of the operation is omitted.

Of course, I speak from the stand-point of my own practice, and having practised immediate root-filling for nearly twenty years, during which time it has never occurred to me to "treat" a tooth found filled with pus and no fistula, any more than I would "treat" a small coronal cavity to be filled with gold.

The steps in the two operations are precisely alike. Note them: Open, that is prepare the cavity; cleanse, that is remove the decay, débris, and foreign matter; sterilize, the small cavity is sterilized just the same as the root-canal; dry, d-r-y,—that is the feature upon which the success of the operation depends. If I cannot dry the small coronal cavity, I do not fill with gold. If I cannot dry the root-canal, I do not fill it. That is the only requisite I demand which is sometimes beyond my control. I can always “open” the cavity, but I find occasionally a root-canal which I cannot dry. Under those circumstances it cannot be cleaned or sterilized, consequently it *cannot* be filled properly, and such is not attempted. Probably at the next sitting this may be successfully done.

I hold that, no matter what the condition of the tooth at the beginning of the operation, if the root-canal can be gotten perfectly dry, that is the best time to fill it, for treat it until doomsday and you will not improve its condition.

As I said before, I am merely giving you my views. The essayist quoted freely from Dr. F. Milton Smith. Notwithstanding not having had the pleasure of meeting Dr. Smith, I would risk my reputation upon his being a careful, skilful, conservative operator, and one to whom the most minute detail always appears of the greatest importance, and I venture to say his drying his canals is his “sheet-anchor” in this turbulent proposition; in fact, in the discussion of the paper he states as much.

In the discussion of the paper the essayist says that to his knowledge, during a practice of twenty-five years, he has lost but two teeth under his “continuous performance” method. Candor, for which I have a reputation, will not allow me to give my record, as it would subject me to the mortification of an unfavorable comparison with the above, but I am confident that I now have less trouble with the immediate method than I had previously with the other.

Let me cite a recent and fairly typical case:

Mr. O. P., aged about fifty years, called, complaining of trouble with a right lower second molar, which was painful under pressure and very loose. The tooth had been troubling him for some six months or more, during all of which time it had been under “treatment.” It would be “treated” for a period, when it would be sealed temporarily, which sealing was always followed by pain, and conse-

FIG. 1.



Skiagraph, showing lead post in position.

quently removed and the "treatment" continued. Finally becoming tired of all this "treatment," he decided to come to me.

An appointment was given, the tooth well opened up, when the remains of two anterior canals were found very fine, and probably about half the length of the root. The posterior canal was large, with evidently something very wrong at the end of the root, as a large opening was found at a depth much less than the length of the root was judged to be, perforation, therefore, being surmised, from which a large quantity of pus came. As usual in all such cases, a lead post was carefully fitted just to reach this perforation and secured in position, when a skiagraph was taken with the result as shown. (Fig. 1.)

From this it was clearly seen that this root had been considerably absorbed, that the lead post just reached to its apex, and that considerable diseased tissue surrounded the apices of each root. Everything being now clear sailing, the root-canals were filled as usual, *while the tooth was still sore and loose*, and immediate improvement set in, as was expected. In a few days all soreness had disappeared, and when I saw the patient a few months later, it had become quite solid and had resumed its function of being a very useful tooth, and was to all appearances in perfect condition.

Here is a fair sample of how a tooth was being "treated" to death, but fortunately rescued, not by any radical procedure, but by good common-sense conservative methods, which were by no means new, and it does seem that such methods, having about obtained their majority in point of age, should supersede such practice as advocated by your essayist, and that the pages of our dental journals should no longer be wasted in accounts of what should be practically considered obsolete methods of the management of pulpless teeth.

[REMARKS.—The author of this paper wishes an opinion of this case. There probably can be but one given,—that in cases unyielding, such as this, immediate filling should be attempted. The writer has frequently performed similar operations with varying results, but even where these are of the best they do not affect a general principle. The author evidently abandons his former statement, and the one which resulted in this paper, by insisting on a *dry canal*. There will, probably, be no dispute as to this being generally a very safe canal for immediate filling.—ED.]

Reports of Society Meetings.

ACADEMY OF STOMATOLOGY.

A REGULAR meeting of the Academy of Stomatology was held at its rooms, 1731 Chestnut Street, Philadelphia, on the evening of Tuesday, January 27, 1903, the President, Dr. R. Hamill D. Swing, in the chair.

A paper entitled "Porcelain Inlays and Restorations" was read by Dr. W. T. Reeves, of Chicago, Ill.

(For Dr. Reeves's paper, see page 489.)

DISCUSSION.

Dr. Joseph Head.—The innumerable good points of Dr. Reeves's paper speak for themselves, and as I am well known to be in hearty sympathy with him on the subject of porcelain inlays, I shall not therefore take up valuable time in discussing the points upon which we are agreed, but rather the points wherein we differ.

When he criticises the Western dentist who claims that he is able to prepare a cavity and insert a porcelain inlay inside of an hour as doing crude and inartistic work, I can only say that I have frequently prepared two cavities and put in two porcelain inlays inside of one hour. By so confessing this, I no doubt lay myself open to the same charge of doing inartistic work, but as much of this work has lasted for five or more years and in many instances is not apparent at a distance of ten or fifteen inches from the patient's mouth, I am compelled to feel that for all practical purposes it fulfils its end. When Dr. Reeves says that it takes him two or three times the period of an hour to make a filling, I am sure that he has over-estimated the difficulty of the work. Some fillings of exceptional difficulty would demand so much time, but the ordinary approximal or labial inlay can be readily finished inside of the period of an hour. He has confessed this in a later portion of his paper, where he says that he can make an inlay much more expeditiously than the average operator could put in an ordinary gold filling, pin-head fillings excepted; therefore, I should like to ask Dr. Reeves which of these statements he wishes us to under-

stand. Does he mean that he can make inlays more rapidly than the ordinary gold filling can be inserted, or does he mean that it really takes him two or three times the space of an hour to make the ordinary inlay?

Concerning his enumeration of conditions where gold could not be used and where porcelain could, I am constrained to say that while I agree with him in many instances, in others I disagree. He says that he can do permanent work with porcelain where it is physically impossible to prepare a cavity even for a cement filling, which, of course, is a slip of his pen; for, as porcelain has to be put in with cement and certainly requires a much more careful preparation of the cavity than a cement filling would ordinarily, it is difficult to see how the extra work required for preparing the cavity for porcelain can be done, where the same work would not be possible in the preparation of a cavity for cement.

Concerning his remarks upon compatibility, in which he claims that porcelain lasts through some intrinsic quality of compatibility with tooth-structure, and states that it is much more advantageous than the compatibility of gold, I should like him to make clear to us why it is that gold inlays properly cemented into place will last quite as well as porcelain inlays. Does he not mean that the cement properly protected is the great tooth-saver? That the cement that will wash out of an unprotected cement filling will when protected either by gold or porcelain make an edge that is practically immune to decay?

Concerning his method of getting the color, I have only words of praise, although I hardly feel that he has mastered the shadow problem thoroughly as yet, and I should be very glad to see work that would not allow variation in shadow according to the direction in which the light was thrown upon it. His plan of having two separate colors in the same inlay, one to represent the enamel and the other to represent the dentine in inlays of considerable size, is a most excellent plan, and I have frequently taken advantage of some such procedure by making my labial cavity fillings the color of the enamel only, and relying upon the yellow cement underneath to give the color of the dentine which shines through the surface of the tooth at the cervical margin. However, as Dr. Reeves well must know, porcelain inlay work contains so much of the artistic problem that specific methods of obtaining the color

can no more be laid down than an artist could lay down specific rules for obtaining the proper color in the portrait he is painting. But each method is of value, and the remarks of Dr. Reeves on this subject should be received with the thanks of the profession, and I for one am heartily obliged to him for throwing light on this most difficult question.

Concerning his remarks on the matching of discoloration in the tooth, I am not in a position to speak, for I bleach the enamel before I put in the inlay, and, therefore, have practically no stains to match.

I have not had perfect success in using the Brewster bodies, but since Dr. Reeves uses them with such good effect, I, of course, am to blame. In my hands the Whiteley bodies and the porcelain of the S. S. White Company have given the best results.

The plan that Dr. Reeves uses, of burnishing his matrix three separate times before it is finished, would in my hands not give such perfect edges as a single burnish. The platinum so treated by me would be apt to act like an overwaged plate, the edges rising up from the centre. When I burnish the ordinary matrix into place, the metal should never budge from the cavity walls until it has been spun into place from the margins to the bottom of the cavity; however, this is a mere matter of detail. Some gentlemen can work better by taking an impression of the cavity and swaging the matrix with the die and counter-die. Others have the double burnish, the second one being given after a portion of the porcelain has been baked in the matrix. Dr. Reeves uses three separate burnishings, which necessitates three separate annealings of the platinum.

Before closing, I must say that Dr. Reeves's interpretation of the physical law of adhesion does not seem to me so conclusive as to make me give up undercutting the inlay and undercutting slightly the cavity walls. The adhesion of the cement is a great source of strength in supporting the porcelain as well as the tooth-structure, but slight undercuts can do no harm and may do a great deal of good.

However, his good results speak for the value of his method, and therefore, I can only congratulate him upon his procedure, and I can also congratulate the profession, for in the multiplicity of good methods lies the hope that the perfect method will in time be given to us.

I also cannot see how the porcelain is a saver of the pulp, since the porcelain is protected from the tooth-structure by the cement.

Dr. E. T. Darby.—Through the courtesy of Dr. Reeves I had an opportunity of reading his paper before he came on from Chicago, and I was intensely interested in it, as I have been to-night in hearing it read.

Dr. Reeves's work speaks for itself. He is undoubtedly one of the very best porcelain inlay workers in our country. I have never seen more beautiful work than that exhibited by him last summer at Niagara Falls. I have been somewhat familiar with porcelain work for a number of years, and with the work of Jenkins in Dresden. I saw him do first the porcelain work with the low-fusing body, and was much pleased with his results. I have seen a good deal of his work that has come to this country in the mouths of my own patients, and while I have been pleased with the results he produces, I cannot say that the work he did is any finer than that I have seen done in this country by Dr. Reeves and Dr. Head.

The question of high- and low-fusing bodies is a very important one. The objection on the part of the advocates of the high-fusing body is that low-fusing body changes its shape and color. My experience and observation have taught me that the low-fusing bodies give a much more beautiful surface and that the inlays are smoother. That low-fusing bodies do sometimes change I admit. I have seen instances in which the color has changed and the surface lost its beautiful polish.

As for the technique of the two methods, that used with the high-fusing bodies is preferable as a time-saver. If gold be used as in the low-fusing, it is necessary to invest the matrix before baking the inlay. Dr. Jenkins claims that the matrix retains its shape better by using No. 30 gold and investing the matrix than could be secured by one one-thousandth platinum and not investing.

I have of late rather switched off from the low-fusing bodies, and have been using the Whiteley body with satisfactory results. I do not, however, think the inlays are as beautiful when first made as are those made with the Jenkins body.

One point to which possibly exception should be taken has already been referred to by Dr. Head, that is, that the inlay is held in better position by not making undercuts than by making them. Another point is that the cement does have strength and holds the materials together.

Dr. Reeves says that he does not extend his cavity margins, and that these surfaces are immune to decay because filled with porcelain. With this I cannot agree. I think that if the cavity is not properly cleansed decay will recur around the porcelain filling. I do not believe the cavity is immune because filled with porcelain. I should extend my margins well and should not object to labial extension if porcelain be used, because it is not unsightly. I would prefer to extend my margins to avoid recurrence of decay rather than to do as Dr. Reeves advocates.

Dr. V. T. Smith.—My experience with porcelain inlays has not extended over a great number of years, but the work has been of great interest to me. I think Dr. Reeves has presented the subject in the most scientific and thorough way possible with the present facilities. I consider myself very fortunate to be able to witness his operations. There are, however, a few exceptions which I would take. It would be better if inlay workers knew exactly when to carry their margins beyond all points of contact. The cervical borders are sometimes apt to be overlapped by the less careful operators.

Many of the profession labor under the impression that the Jenkins system is the same as that which came out originally. The fusing-point has been raised and the material is better. One particular advantage is the close adaptation obtainable with the gold matrix. If there are any folds or hard places the gold will burnish down very much better and give closer margins than the platinum. I have, however, been using to a large extent the high-fusing bodies and think that they have a great many advantages. I do not mean to speak altogether in favor of the low-fusing bodies, but to let the members know that there has been a difference.

I was very glad to hear the matter of retention brought up. My experience has been that there should be as much retention in the cavity walls as possible to go without the making of undercuts. I believe that Dr. Reeves's plan of using hydrofluoric acid is an excellent one. I think the acid is more useful than the grooves to hold the inlay in place because you have adhesion over the entire body of the inlay; and in the other method it is present only in the grooves. Since I have been using the hydrofluoric acid method I know of no inlay which has come out of its place, except in several cases in which I am positive the occlusion was allowed to interfere. I would like Dr. Reeves to explain his method of using the acid, as a matter of interest to the members.

Dr. Hornberger, New York.—I have thoroughly enjoyed both the paper of Dr. Reeves and the demonstration given by him this afternoon. I belong to the other faction: I am a Jenkins man. I cannot say that I have tabooed all the other methods, but I have tried them all, and have come back to the Jenkins method. I use platinum in the majority of cases because it is a time-saver. I can get better color and more natural-looking inlays by using the Jenkins body than with the others; that is to say, with a great saving of time. Dr. Reeves said that one reason inlays have to be ground is because the low-fusing body balls up. That is the case if you over-fuse the body, but if the body is guarded you can get it out before it does so. If you wait until it balls you burn out some of the color. I am not in favor of any low-fusing body except the Jenkins. The latest Jenkins body is much superior to the original. I have taken a bit of the Jenkins body and stood on it with my entire weight, and it has not broken; and it has the advantage of being capable of as high a polish on its edges as on the surface. I have had a porous inlay only in case of over-fusing or when too much fluid has been mixed with the body. Then it is bound to settle down. If you will pack the body down tightly you can get it as hard as any you can use.

I personally use undercuts in my cavities, and also use grooves in the inlay. When in doubt I use in addition hydrofluoric acid. There are some cavities involving the incisal edge which I believe must have some retention in the way of pins. I do not think large fillings involving the incisal edge will remain in for any length of time without them. I have adopted the following method (illustrating on board): With a small bur I drill a pit in the cervical wall of the cavity parallel with the pulp, and then make another at a point near the cutting edge and parallel with it. Platinum wire No. 24 is given a right-angle bend and fitted to the two holes in such a manner as to leave a platinum loop slightly above the pulpal wall of the cavity. I then put cement into the pits and force this wire into it and bring the cement up under the loop so as not to have any undercuts. After that is finished I make the matrix and bake the inlay. I then use the carborundum stone to undercut the groove corresponding to the loop. I then remove the cement from beneath the loop and cement the inlay to place. The cement crystallizes around the loop and retains itself in the cavity of the porcelain inlay and cannot be pulled out.

Dr. A. N. Gaylord.—I feel that in inlay work there is a place for both methods. I commenced to work with the high-fusing body, and have done work with it which I considered satisfactory. I have also done work with the low-fusing which I think is satisfactory. There are places where I would prefer one and consider the other inferior, and *vice versa*. I do feel that closer adaptation is possible with the gold matrix than is possible with the platinum matrix. I have tested the gauges of No. 30 gold and $1/1000$ platinum, and find the former to register $6/10000$ of an inch on the micrometer, while the so-called $1/1000$ registered $16/10000$, a difference between their gauges of $1/1000$ of an inch. This may explain the better adaptation obtainable with the gold matrix. I think I can do better work, get closer adaptation, better color, and generally better results with the low-fusing body. It takes more time, but this should not be a matter for consideration. It is the result and not the time saved we should consider.

Dr. Hornberger.—I would like to say a word in regard to the strength of the Jenkins body. I had occasion about a year ago to make a pivot tooth for a man lifting heavy weights. At the same time I removed a defective bridge. Whenever he lifts these weights he grits his teeth together. The pivot lasted for four months under this excessive strain, and I replaced the bridge and made another pivot tooth, which has lasted for eight months and does not at present show the least trace of any crack. This shows that there are other things strong besides the high-fusing body.

Dr. W. H. Trueman.—I am not an enthusiastic porcelain worker. Porcelain inlays, I think, have been before the profession not fifteen years, but at least four times fifteen years. We can find record of them year by year from that time to the present. When Mr. Murphy began his work in Philadelphia in 1835 he had to fire up a large porcelain furnace, and it was only when the little convenient furnaces came into use that the work was done without great trouble. I admire very much the essayist's enthusiasm. I have always been rather conservative, and in many cases, when I have been about ready to take up a method, the profession has discarded it. I cannot understand why porcelain should be so much more compatible with tooth-structure than some other things. I cannot see why the microbes that form around gold fillings are not found around porcelain fillings. I can appreciate the benefit of glazed surfaces, but I am not so certain that such surfaces are so

thoroughly compact as we sometimes think. In one instance in a porcelain tooth worn in the mouth for a long time the entire surface was found to contain a bacterial growth which extended some distance from the surface. I do not think that the porcelain inlays are any less porous; but, at the same time, I am not an expert, and recognized from what Dr. Reeves has said that he is.

I would like to know why an artificial tooth should chip and an inlay not. I have put a few in position, but have been careful that no pressure of mastication should be put upon them. I have had the same experience with crowns. If this always occurred in my own work, I would think it my own fault, but I find it in the work of others.

Now, it is all right to try these things, but I think it is just as well to go a little slow until we find out what can be done with them. Porcelain work has its place, and I think it is an excellent thing in those cases in which it is indicated. We have to recognize our own limitations.

Points have been mentioned that are new to me, but they are plausible, and I am strongly impressed that if those who, like myself, are not experts would take hold of them they would be found helpful.

I am glad to have heard the paper, and thank the doctor for having come here to read it. I know I shall carry home much that will add to my knowledge whether I make use of it or not.

Dr. Reeves.—I believe Dr. Trueman's results come entirely from the fact that the porcelain was ground and the glazing removed so that the porcelain absorbed the materials which were burnt out by the heat. He speaks of a crown breaking, and asks why a thin film can stand as much strain as a great bulk of porcelain. I care not how thick the inlay is, when it is cemented and the cement crystallized the film of inlay has the full strength of the tooth; whereas, a number of times the thickness in the form of a crown may not have the same strength. The inlay will stand an unlimited amount of stress.

One gentleman referred to a case in which the tooth had to be ground. In many instances on the cutting edges of the anterior teeth the inlays must be ground to provide for the wear of the natural teeth.

I think it is the exceptionally favorable case that can be completed in the time that Dr. Head states. I leave the rubber dam

on for thirty minutes after the inlay is set. The cavity I spoke of was a large one involving an incisal edge.

You cannot put in a cement filling that is subject to stress in any tooth unless you provide something to hold that filling. The cutting of these undercuts to hold the cement filling is the last straw. The preparation of a cavity for inlays in these cases is the simplest possible.

Regarding the compatibility of porcelain inlays, the point was advanced that gold inlays preserve the teeth as well. I think there is a misconception of the class of cavities meant. The cavities referred to that establish the condition of compatibility of material are those so close to an exposure of the pulp that the pulp would be absolutely sure to die under any cement filling. It will be more likely to do so under gold inlays than under an all-cement filling. The compatibility comes in the condition which the porcelain brings to us. The inlay should be carried to the full depth of the cavity. The porcelain comes nearest to restoring the tooth to its normal condition.

With regard to grooving, I would say that in 1896 I used the last pin in any cutting edge or any form of cavity as a means of retention. Seven years ought to be a good length of time in which to prove the value of close adaptation. I know it is a hard thing for any dentist to get away from the idea that he must have some means of retention, but I believe that close adaptation is the secret of inlays staying in cavities.

Dr. Head spoke of the porcelain as a preserver of the pulp. I could cite numerous instances in which I had complete exposure of pulps, many of them made by accident, and in which the pulp was in a healthy condition. After putting in inlays there has been no further trouble. About nine months ago a young girl was brought to me who had broken one of her central incisors, leaving an exposure of the pulp. I washed the cavity out with carbolic acid and put a little temporary filling upon the tooth. The tooth was sensitive until the next appointment. I made an inlay, and, knowing where the pulp was exposed, I avoided burnishing over that spot. When the inlay was made and set she experienced no pain from the pressure, but a little from the heat of crystallization. In fifteen minutes after it was set she was entirely free from all pain, and has never had the slightest discomfort from the tooth since.

If I understand the argument regarding the thickness of the matrix metal, it is on the line that the metal occupies the same amount of space which is afterwards filled up with cement. In a cavity with walls at right angles to the pulpal wall the thickness of the material would come off of both sides, but when the cavity has walls at obtuse angles to the pulpal wall the thickness of the matrix makes no difference. The inlay sinks into the cavity and fits at the margins.

Dr. Gaylord.—I grant that that may be so in the majority of cases, but there are cavities in which you have three surfaces to deal with, and where the sides do play a part.

Dr. Reeves.—Well, I have made them of all kinds, and have yet to find places where the matrix makes any difference at all so far as taking up space is concerned. I think it is close adaptation that will give strength of retention.

Dr. Hornberger.—May I say, quoting from your own paper, that a film of the porcelain, no matter how thick or how thin, provided you have crystallized cement behind, becomes strong. Consequently, if, as in the case I referred to, you have an inlay with a cavity in the centre and have crystallized cement in that central cavity, it must be strong.

Dr. Reeves.—But you have not got cement all around your pin where it enters the tooth; you have porcelain around your tooth.

Dr. Hornberger.—I undercut the central cavity so that the inside is larger than the outside. Consequently the cement must go in and the pin is cemented into the tooth.

Dr. Reeves.—I did not understand your method; I supposed you had a baked-in pin. There will be one objection to that method. In cavities approaching close to the pulp which you would fill in large part with cement to protect the pulp you may protect the tooth, but in making inlays it would be better to carry the matrix down to the cavity and let the porcelain come to the film of cement. When you come to put on those corners, I am inclined to think that the easier way would be just as good. I do not believe there is any need of cutting away solid tooth when putting in an inlay, because the inlay will protect from decay. One of the best features of inlay work is the minimum of taxation of the patient's strength.

Dr. Smith.—Do you attribute the immunity to decay to the glazed surface? Do you mean the non-adhesiveness of materials to the surface of the porcelain?

Dr. Reeves.—Yes, I think the glazed surface produces the immunity to decay.

Dr. Smith.—Between the filling and the cavity margin there is sometimes a small amount of cement washed out. Is there not danger of this causing decay of the proximate tooth?

Dr. Reeves.—In the majority of cases such margins do not extend the depth of the enamel. Dr. Ames, of Chicago, thinks this is the reason why it lasts under the inlays when it would wash out in other places. There are lots of things hard to answer, and I do not pretend to explain the fact that we have no decay around inlays. It is certainly a fact that we do not. It is equally true that with the simplest of gold fillings we do have recurrence of decay. I mentioned the glaze upon the inlay surface as the most plausible explanation. We have many amalgam fillings about which there has been no recurrence. When we consider that class of mouths in which teeth decay rapidly and no ordinary fillings last, and find that porcelain does preserve the teeth, it is a pretty strong argument in favor of porcelain. In a case of a young lady coming into my hands in 1892, in which gold had lasted but a year, the porcelain inlays lasted until three years ago. Cement fillings were put in, but I advised replacing the inlays, and they have worn well now for three years.

Dr. Smith.—Did you have recurrent decay around the cement fillings?

Dr. Reeves.—The contour of the cement fillings had to be renewed. If I had left them, there would have been decay.

Dr. Smith.—Would it not be possible that the oxyphosphate of zinc was the immunizing factor? We all know that zinc has anti-septic action. You can see areas around zinc where bacteria will not accumulate.

Dr. Reeves.—It may be. I am advancing what I think to be the cause of the immunity.

OTTO E. INGLIS,
Editor Academy of Stomatology.

INTERNATIONAL DENTAL FEDERATION: MEETING
HELD IN STOCKHOLM, SWEDEN, AUGUST, 1902.

(Concluded from page 468.)

COMMISSION OF HYGIENE AND PUBLIC DENTAL SERVICES.

Monday, August 18, 1902.

THE opening session of the Commission of Hygiene and Public Dental Services was held in the Caroline Institute, Stockholm, Monday, August 18, 1902, with Professor Dr. Godon in the chair.

The following members were present: Drs. Queudot, Zsigmondy, Wachsmann, Lizka, Hesse, Davenport, Younger, Gordon White, Hayes, Viau, Martinier, Frick, B. Holly Smith, Godon, Guerini, Benson, Harding, Whittaker, Bain, Guldberg, Weber, Bensow, Smith-Housken, Barrett, Bödecker, Weiser, Förberg, Heidé, Frank, Jenkins, Cunningham, Röse, Sauvez, Aguilar, and Harlan.

The Commission then proceeded to the election of officers, the result of which follows: N. S. Jenkins, Dresden, president; Dr. C. Röse, Dresden, Dr. J. Frank, Vienna, Dr. E. Förberg, Stockholm, Dr. G. Cunningham, Cambridge, vice-presidents; Dr. R. Heidé, Paris, secretary.

Dr. J. Frank presented the report of the Commission of Hygiene, which was not read because of its considerable length.

Appended to this report was a communication (marked "A") of the Austrian Secretary of the Interior to the local authorities, instructing them to study the question of the relation of dentistry to public hygiene; one marked "B," comprising the sixteen questions that were addressed to the members of the Commission in different countries; one marked "C," being the report of Dr. Frank to the Austrian Secretary of the Interior, comprising besides the principal document several smaller ones; a report by Dr. E. C. Kirk, Philadelphia, on public dental hygiene in the United States, comprising the text of the law providing for dental services in the army, and an extract from the *Dental Cosmos* on the proposed law to provide for dental services in the navy; also several papers embodying the answers to the questions sent out by the special committee composed of Drs. Elof Förberg, George Cunningham, and Johan Frank. These answers refer to the condition of public dental hygiene in England, Denmark, Norway, Russia, and Switzerland.

The conclusions of the report are as follows:

1. Popular dental hygiene is as yet in a state of detrimental neglect in the majority of civilized States, though here and there are discovered evidences of an initial improvement.

2. The Executive Council will address through the national federations a memoir upon dental services to the different governments, inviting them to submit the propositions therein contained to competent examination.

Dr. Frank then read the circular which the committee proposed be sent to the governments of the various countries. The circular here follows:

The Executive Council of the International Dental Federation, at its session held in Stockholm, August 15 to 20, 1902, has discussed and approved the report of the Commission of Hygiene, and, following the suggestion therein embodied, has agreed to request the co-operation of the governments of the different States towards that branch of public hygiene which deals with the care of the mouth and teeth.

The Executive Council has learned with regret that this very important branch of general hygiene has been conspicuously neglected in practically all countries, and that the pupils of the primary and secondary schools, representing about twenty per cent. of the entire population, do not receive any dental care whatsoever.

The Executive Council of the International Dental Federation, comprising the delegates of all the dental associations of different States, being concerned in elevating the scientific status of dentistry and in introducing it into the realm of public hygiene, respectfully beg to draw your attention to the accompanying reports, which we earnestly request may be submitted to the consideration of the eminent personages having charge of your systems of education and public hygiene. These reports show that dental caries is a public evil which is daily increasing in magnitude, and that in certain countries from sixty to ninety per cent. of all the inhabitants of twenty years of age are sufferers from dental caries. Furthermore, these reports show that this widely propagated malady can become the cause of general organic disturbances, that it makes of the mouth a culture medium for the development of zymotic germs which if permitted to develop produce diseases acute and chronic (even tuberculosis), and that a certain number of persons thus affected are rendered physically incapable of entering the ranks of certain callings.

The Executive Council take the liberty of calling your attention to the urgent need of eradicating this evil for the sake of human welfare, and consider that the best means of combating it consists in the organization of public dental services.

As regards dental services in schools we will refer you to the appended reports marked "D," "E."

The gratuitous dental services for the poor could be arranged as follows:

- (a) By the appointment of public dentists.
- (b) By the organization of dental clinics in the public hospitals.
- (c) By giving free dental attention to the poor in the dental schools under governmental control.
- (d) By the appointment of dentists in all charitable institutions.

With reference to the establishment of dental services in the army and navy, we beg to call your attention to Chapter III. of the report.

As to the organization of dental services for employees of inferior grades, we offer the suggestion that a savings-fund be organized among the men for this particular purpose, and that in manufacturing institutions in which the teeth of the employees are exposed to noxious influences (phosphorus, mercury, acids) dentists should be attached to the establishment in order to carry out bimonthly examinations of the teeth and to give proper conservative treatment. These dentists should be under the supervision of the district physician and of the inspector of factories. It would be likewise advisable to organize dental services among railroad employees.

Finally, it is of urgent necessity that councillors having a dental education or a certain degree of familiarity with dental matters should be appointed to the different boards of health. To these members could be intrusted the study of dental problems as well as the promulgation of measures concerning the organization of dental services.

EXECUTIVE COUNCIL, *F. D. I.*

Mr. A. R. Bain, Melbourne, spoke on the ideal arrangement of placing dental hygiene under State control. Every dentist should work towards the attainment of this reform, as dentists alone can appreciate its vast importance. The secret of healthy teeth everybody will admit depends mainly on the care and attention given to them in early life. It becomes at once evident that in early life the teeth should be inspected at frequent intervals, and the best way of accomplishing it would be by placing dental inspection under the care of the State. We must not lose sight of the fact that public authorities must be careful of the hygiene of the people in view of maintaining the health of the nation, and therefore, with the same purpose in view of elevating and improving the race, the teeth should not be neglected. The question is not only of an individual character, but also of national import.

Mr. Bain suggested that to the communication proposed by Dr. Frank be appended a notice to be posted in all public schools, setting forth in simple terms the imperative necessity of brushing the teeth after meals, the reason for doing it, the advantages of this practice, the dates of eruption of the permanent teeth, the advantages to be derived from dental inspection, and the list of free

dental dispensaries for the treatment of those who for financial reasons could not afford to have their teeth attended to in private offices.

Dr. C. Röse thought that while Dr. Frank's report was well framed it was not sufficiently clear, and made a motion to the effect that its adoption should be deferred to the next meeting of the Commission in Madrid.

Dr. Frank thereupon stated that it had taken him a year to collect the data necessary for the preparation of the report, and that it would mean a loss of time to defer its discussion to the Madrid meeting.

Dr. Godon suggested that the conclusions alone be discussed at that session.

Upon motion by Dr. Sauvez, the Executive Council decided to undertake the study and final adoption of the report and the forwarding of it to the different governments.

The Commission then extended a vote of thanks to the members responsible for the preparation of the report, Drs. Frank, Cunningham, and Förberg.

Dr. Jenkins thought that the president of the Commission should be familiar with the French language, and as his own knowledge of that language is very imperfect respectfully submitted his resignation in favor of some one better suited for the office.

The members of the Commission, however, insisted upon having him as their chairman, and rejected his resignation by acclamation.

The meeting then adjourned.

August 19, 1902.

The meeting was called to order at the Grand Hotel by the president, Dr. N. S. Jenkins, Dresden.

Dr. Röse made a motion to the effect that a committee be appointed to correct the report as presented by Dr. Frank.

Dr. Heidé stated that, inasmuch as the report had been in the hands of the members for several days, they ought to be in a position to present their remarks at once.

Drs. Frank and Röse called attention to a few inaccuracies in the report.

Dr. Jenkins moved that the original report of the Commission be revised, translated, and addressed to each member of the Council, to be approved and signed before October 31, 1902.

The memorial presented by Dr. Frank on the previous day was then adopted.

Dr. Röse made a proposition with reference to the organization of conferences on public dental hygiene, saying that a good method of developing this important branch of general hygiene would consist in illustrating these lectures by means of appropriate slides, as carried out at the present time in Dresden.

Dr. Förberg said that, at Stockholm, illustrated lectures on dental hygiene have already been given by himself.

Dr. Heidé stated that also in France illustrated lectures have been given upon this topic.

After a few remarks by Dr. George Cunningham, the Commission adjourned to meet in Madrid in April, 1903.

Editorial.

THE CONVENTION PERIOD.

THE season of recreation is at hand, and the busy practitioner is looking forward with an earnest desire, born of an overstrained body, to that time when, leaving closely confined and not over-healthful rooms, he can enjoy the freedom of air and sunlight.

It is strange that the stomatologist should seek this time of the year to secure rest and to hold his conventions. He apparently accepts this and the torrid heats of an American summer as part of the new invigoration he hopes will be his. He has never been able to answer the question to his satisfaction, Would not some other period be more conducive to health and pleasure? If he has an answer, it will probably be, This is my vacation period, and I must use this or fail to take part in associated effort. June, July, and August are, therefore, the dental convention months and the active mind in dentistry is preparing to take part in State, national, and educational dental conventions.

State conventions, since the origin of dental laws, have assumed, as a rule, much greater prominence than in former years. Those States in which election to the State Boards of Examiners required previous nomination by the State dental societies, have made these

bodies the centres of a certain kind of political activity and an added interest to a class of mind not infrequently found in all associations. The usefulness of the State organization was, in former years, an unsolved problem with the writer. Socially it was an event, especially where the meeting was held in some pleasant sea-side or mountain resort, but the scientific value of these meetings has failed to reach a standard commensurate with the amount of labor devoted to them. Why this should have been is difficult to determine, but the explanation may be found in the fact that the number who may have had time and inclination to delve for facts is extremely limited. This being true it is reasonable to suppose that the individual who has spent months in laboratory work would naturally prefer to give forth his conclusions to a larger audience, or, more likely, not give it even there, preferring the more direct contact with a wider range of mind in the dental periodicals of the world, for eventually all productions, good and indifferent, reach this end, the first to live and bear fruit and the last to die.

The conventions of this year are the National Dental Association, which will convene at Asheville, N. C., July 28, and continue four days in session; the National Association of Dental Faculties, which will meet at the same place, Asheville, July 24, and the National Association of Dental Examiners, which will likewise meet at Asheville upon the same date.

The National Association meets for the first time farther south. It was born in the South, at Old Point Comfort, Va., and in its yearly changes to the three points of the compass, East, West, and South, it has, when reaching the latter, gone to the place of its origin. The Northern members anticipate that this change will bring them in contact with a much larger number of their professional colleagues than they usually met with from that section of the United States. While they will miss much of the invigoration of the sea, its loss may be compensated for by the mountain-air of this famed summer resort.

Much interest concentrates about this national body this year, for it must arrange for the International Dental Congress to be held in St. Louis in 1904. That this will be accomplished without friction is not to be expected. Indeed, for a year past the storm centre has changed its location repeatedly between America and Europe. It is a remarkable fact in human nature that, let any

movement be inaugurated, whether that be political, religious, philanthropic, or professional, there will be a certain set never quite happy unless they are at the head, or as near to that as possible. This has been true of all international dental congresses held in this country and, possibly, elsewhere. Why men cannot be satisfied to work in the ranks and let the honors of the world fall where they legitimately belong is one of the strange presentations of our complex human nature. There has been war between the committee of *nine* appointed by the International Dental Federation at its meeting in Stockholm, Sweden, to take charge of the Congress, and the committee of *fifteen* appointed by the National Dental Association at Niagara Falls, N. Y., in 1902, for the same service. The contention between these two committees will probably be settled by compromise. At this writing it would seem that the committee of the national body will have the organizing of the Congress. There is much preliminary work to be done in order that this convention may reach the success attained by previous congresses.

The scientific side of the national meeting at Asheville will depend mainly upon the character of the material presented, but, if we may judge from previous gatherings, this will not be an extended advance in the grade of professional work. While this is not to be expected, the good that these national gatherings accomplish is not to be calculated upon this basis, but rather upon the combined effort of widely separated thought upon a single effort. This must always be productive of good through its centralizing power upon the professional mind.

The National Association of Dental Faculties has a continued work to do in maintaining the dental educational standard. It has been a power in the past, and has, through its combined and direct influence, brought dental collegiate instruction in this country up to a standard unthought of a quarter of a century ago, and, if wise counsels continue to prevail, will raise the standard during the twentieth century to a higher plane than is at present possible of attainment. There has been much unjust criticism of this body, that it devotes too much of its time to regulating its membership. This comes from those least familiar with its legitimate business. That it does so regulate is true, but the training of colleges, in membership, and leading them all to a unity of effort, is as much a part of its work as the regulating of the curricula of the several institutions.

The four years' course, beginning 1903-04, will necessarily claim some attention in this body, but, as that will practically settle itself, it would not seem to require extended thought or discussion.

The National Association of Dental Examiners, of which less is known than any other of the national organizations, as it never publishes its proceedings beyond the list of accepted colleges, would do the dental profession a distinct service if it would take up the interstate relations of dental laws and endeavor to have the restrictions of professional intercourse removed. It is the only organized body that can deal with this somewhat intricate subject.

The time will, in all probability, not soon come when more satisfactory organizations will be formed than those at present existing, and it therefore seems to be the duty of all interested in the development of dentistry to aid to the fullest possible extent in making those we have as valuable as possible, leaving to future generations the duty of building better than we have been able to do with the professional materials within our reach. We are still in the formative period of dentistry, and until that be passed it is hopeless to expect the establishment of a true professional life or work.

THE COMMITTEES OF FIFTEEN AND NINE.

ATTENTION is specially invited, under the proper head, to the very able report of the Committee on Congresses, signed by the Director of Congresses, St. Louis, 1904, Howard J. Rogers, and the Chairman of the Committee on Congresses, Frederick W. Lehmann. It is worthy of careful reading, being a very clear and correct statement of facts relating to the controversy between the Committee of Fifteen appointed by the National Dental Association, at Niagara Falls, August, 1902, to organize the Fourth International Dental Congress, and the Committee of Nine, appointed by the International Dental Federation at Stockholm, Sweden, August, 1902, for the same purpose.

Our readers will find the substance of the conclusions of the committee in the following quotations:

"We are convinced that it is impossible, in view of the present

status of the discussion, to make, at the present time, an effective consolidation of the two committees. We are sure that the International Dental Federation would agree with us were they in closer touch with the situation. So large a committee is also impractical from an administrative stand-point. There seems to be nothing left in order to create a successful congress except for the Exposition Company to define the duties of the Committee of Organization of the Exposition, and suggest the line of co-operation of the committee of the International Dental Federation. . . .

“We therefore instruct the Organizing Committee of the Exposition to proceed in the work of organizing the Congress, to obtain the ways and means therefor, to issue invitations, to appoint the necessary committees for preparing the programme, for the entertainment of guests, for nominations, etc., and on such committees to give equal representation in membership to the Committee of Nine, and in all matters to take due care of the rights of every foreign nation and of the obligations due to the International Federation as the authorizing body of the Congress.”

This settles a controversy that threatened the success of the proposed congress.

The Committee of Fifteen, at its recent meeting in New York City, accepted, without reserve, the decision of the Committee on Congresses, and will energetically proceed to organize the work upon the lines specified by the aforesaid committee.

The labor of this committee is one that will strain its best efforts. The time between now and the assembling of the Congress in August, 1904, is ample to accomplish satisfactory results, providing the matter is thoroughly systematized. It is to be hoped that the mistakes of the Columbian Congress will not be repeated. There is no room in such a congress for personal ambitions, and these should be frowned upon and forced to occupy a subordinate place.

The writer regards the assertion of the Committee on Congresses, that the International Dental Federation is the “authorizing body of the Congress,” to be unwarranted by the facts of history. This body never has had the power to call international dental congresses together. It assumed this under a misapprehension of its duty, and hence naturally followed the much-to-be-regretted controversy between the two committees. It is to be hoped that the St. Louis Congress will arrange, upon a proper basis, future con-

gresses, but this cannot be done by a mere vote. The plan should be submitted to the various representative bodies throughout the world, and upon confirmation by these the matter may be permanently settled and future friction avoided.

RECOGNITION OF THE D.D.S. DEGREE BY THE AMERICAN MEDICAL ASSOCIATION.

UNDER the proper heading will be found a communication from Dr. Eugene S. Talbot, secretary of the Section on Stomatology, American Medical Association, announcing the change of attitude of the latter towards those holding the degree of Doctor of Dental Surgery (D.D.S.) or its equivalent. This alteration in the by-laws permitting the holder of the D.D.S. degree to become a member of the Section is indicative of a marked advance in the feeling of the medical profession towards the dental. Whether dentistry should be profoundly grateful for this at this late stage of progress is a question that must be individually answered. In the opinion of the writer the change should have been made long ago. The better class of dentists not burdened with the M.D. degree have taken but a very mild interest in the action of the American Medical Association. The general feeling has been that it would be much better to continue to occupy an independent position rather than one of sufferance in a body giving them only partial recognition. The result of this feeling has been injurious to the Section, and through paucity of numbers has generated weakness, for while numbers are not important in a scientific sense, they do bring an invigorating influence. Whether this change in the attitude of the medical profession towards dentistry will help to give renewed life to the dental section or not, it will largely eradicate the feeling of prejudice that has existed against this body. It must, however, be borne in mind by those at present in membership that any large additions to its body can hardly be expected so long as the Section refuses to receive papers upon the technique of dentistry. To accept part of a profession and not its whole is not only an absurdity, but the D.D.S. naturally and very justifiedly resents it. He will, or, at least, should, say, Accept me as I am, or not at all. The

mechanical part of my profession is of more importance to me than the diagnosis and therapeutics of the medical profession. Any other position is lowering of self-respect.

The claim set up by Dr. Talbot, that the "influence [of this Section] has been felt in universities in the advancement of their years of study, preliminary education, groundwork in medical principles, in the passing of the Army Medical Bill, and in the establishment of the Army Dental Corps," must be recognized as being equally true with that exercised by all dental bodies and by individuals.

No one organization can claim this honor; indeed, it is a question whether any one can assume to have been the medium of progress. This comes through natural development. Medical science to-day is not the medical science of thirty years ago, and dental science has undergone almost a total change in a similar period. The religious conceptions are radically altered from the views held fifty years back. These changes are all the result of scientific progress and mental illumination, peculiar to no era or to no class, but characteristic of progressive civilization.

Bibliography.

THE FILLING OF TEETH WITH PORCELAIN (JENKINS'S SYSTEM).

A Text-Book for Dentists and Students. With one hundred and ten Illustrations. By Walter Wolfgang Bruck, D.D.S., Instructor in the Dental Institute of the Royal University of Breslau. Translated from the German by Charles W. Jenkins, D.D.S., Consolidated Dental Manufacturing Company, New York.

This book of sixty-eight pages, quite profusely illustrated, will serve as an excellent guide in inlay work especially for those who purpose following the Jenkins system.

The author says, "The present work is intended to afford to the beginner, who is unacquainted with this method of filling, a knowledge of it in all its scientific bearings, and to be a faithful guide

and adviser during his practical study of it." That this has been faithfully carried out both in text and illustrations must be conceded, and the beginner in porcelain work upon this method, will find his difficulties very much lessened by carefully following the detailed directions as given by the author.

The fugitive productions by Dr. Jenkins and others have made the system very familiar to all dental operators the world over, but the practical man will frequently be at a loss when it comes to preparing an inlay, and will search probably in vain for the published paper giving instructions. The author has therefore performed an undoubted service in placing this in a permanent form most conveniently adapted to the daily needs of the practitioner. The book can, therefore, be warmly recommended as an authority upon the special system it advocates.

SUCCESS IN DENTAL PRACTICE. By C. N. Johnson, M.A., L.D.S., D.D.S., Professor of Operative Dentistry in the Chicago College of Dental Surgery, etc. J. B. Lippincott Company, Philadelphia and London, 1903.

The author of this timely production is a very busy man as practitioner and editor of a leading journal, yet he finds time to give dental readers the product of his active mind in permanent form. His "Principles and Practice of filling Teeth" has passed the stage of criticism and has been accepted as an authority wherever dentistry is known and practised.

The present book is the result of a matured experience in the establishment of a practice in dentistry. It is mainly intended for the young graduate, but the older practitioner may well secure from it valuable hints in the conduct of practice. Most professional men are seriously lacking in experience of business methods. They pass from school or college into the professional schools, and when graduated from the latter they are landed in a maze of inexperience. This oftentimes leads into a wreck of hope. The author says of this phase of professional life, "Commercialism is a serious menace to any profession, but there is a vast distinction between an offensive commercialism and that methodical conduct of affairs which results in a successful practice and a financial balance on the right side of the ledger at the end of each year." This is so true that it requires no argument to enforce it, and it is mainly through a lack of this "methodical conduct of affairs" that many dentists have

passed beyond the meridian of life to find themselves in abject poverty when age has unfitted them for active work.

The author has performed for the profession of dentistry a signal service in pointing out to the younger generation a way to prevent this difficulty, with ordinary care at the outset of business life.

In order that our readers may have a general idea of the scope of this book, the following detailed account of the contents is given. The first chapter concerns itself with "The Arrangement of an Office," followed by "Winning Patronage, Location, Extending Acquaintance, Managing Patients, Records and Book-keeping, Appointments and Sitzings, Giving Credit, Collecting Accounts, Paying Bills, Fees, Employing an Assistant, Economy in Purchase and in avoiding Waste, Bank Account and Investments, Professional Relationship and Citizenship." It will thus be seen that the author has covered the most important matters connected with practice.

While every page bristles with good suggestions, the chapters devoted to business seem, to the writer, to be most important for young men to consider, especially in keeping proper books and complete records of operations. While most practitioners have their own systems, to which they are more or less wedded, the suggestions of the author will be of value, but for simplicity and effectiveness these must commend themselves to the beginner.

The struggles of the young practitioner in beginning practice without business training have been often observed, but, beyond expressions of sympathy, no practical plans have been devised to lessen this and make his path less burdensome. The time should not be far away when a series of lectures should be given in all dental colleges upon this subject, and then, with this production as a text-book, the undergraduate would, in some degree, be prepared to face an exacting business world. Until this is done this book should be recommended to all graduating classes to be studied by them and adopted as a guide to professional success.

TRANSACTIONS OF THE AMERICAN RÖNTGEN RAY SOCIETY. Third Annual Meeting, Chicago, Ill., December 10 and 11, 1902. Louisville, 1903.

If there be needed any evidence of the rapidity with which the world of science moves, it is made evident by this publication. It seems but the other day, December, 1895, that the scientific mind

of the world was startled by the announcement of Röntgen of what he called the X-ray and the results obtained. In the brief period since that day it has become a most important aid in professional work, and it is difficult to realize that less than eight years have elapsed since its discovery, yet here is a society, with a membership of over two hundred, actively engaged in this work and sending out its proceedings, covering one hundred and seventy-eight pages, containing valuable and excellent illustrations.

What may be the ultimate results of the Röntgen ray no one may tell. The few years have seen it applied to so many conditions that the student of the subject hesitates to express an opinion as to its possibilities. The present pamphlet, in some degree, outlines this and gives the present status of this interesting branch of scientific work.

The papers presented at this meeting were mainly devoted to treatment of malignant growths. The therapeutic value of the rays in this direction seems to have been demonstrated, in many cases effecting a cure and in all relieving the pain and other unpleasant symptoms. While there is much to be learned in this direction, there has been much gained in this important branch of therapeutics.

In a brief period the literature of the X-ray has grown to marked proportions, and yet before the ink is dry on the press new uses are found for it, necessitating new publications. This makes society work, with its publications, an important adjunct of progress in this direction.

Foreign Correspondence.

LETTER FROM DR. N. S. JENKINS, DRESDEN, GERMANY.

TO THE EDITOR:

SIR,—In the May number of the *INTERNATIONAL DENTAL JOURNAL*, page 365, appears a letter from Dr. Rollins which requires correction.

The translation of Dr. Bruck's article which appeared in *Items of Interest* in May, 1902,—not 1892, as Dr. Rollins says by a slip

of the pen,—was erroneously attributed to me. It was, however, made by Dr. Charles W. Jenkins, of Zurich, and, in the publication of the article in book form, he is acknowledged as the translator. I have attentively read both the original and the translation, and see no evidence that the translator has, in any particular, taken the unjustifiable course of either adding to or detracting from the original text or offering any opinion upon its accuracy.

There is a great resemblance in the history of all important discoveries. Different minds work upon the same problem, often for many years. Here and there a gleam of truth is seen, and some investigators are almost upon the secret when they are turned aside by uncontrollable circumstances, until at last it is given to one to combine the fruits of many laborers and to obtain the desired result. In the profound absorption with which I have carried on my investigations for so many years I have never paused to inquire as to the priority of any idea I have adopted, being grateful with a very deep gratitude to men like Rollins and Land, as well as many others, who have thrown light upon the path I was pursuing; for I have frankly appropriated, wherever I found it, any suggestion which could facilitate my progress. It would be impossible to enumerate the sources from which I have received aid, ranging from the humblest mechanic to the most gifted scientist, but I have repeatedly stated in public that the accomplishment of the task I had set myself was largely due to the discoveries, the suggestions, the advice, and the sympathetic co-operation of many far abler than myself. My only merit is that, being so situated, I could carry on a long series of experiments under circumstances more favorable than fall to the lot of most men. I have been my own severest critic, and have persevered in a work which could only have been done by a dentist until I have convinced myself that the result is of the highest importance.

N. S. JENKINS.

DRESDEN, June 3, 1903.

Miscellany.

CHIPPING OF PORCELAIN TEETH IN SOLDERING.—In a communication to the *Dental Cosmos*, March, 1903, Dr. O. E. Wall, of Honolulu, recommends coating the porcelain facings with a rather thick coat of ordinary sperm oil after they are ground and backed, and before waxing up, to prevent chipping at the incisal and approximal edges. After waxing up he recoats the facings freely with oil and invests. When the wax is removed he applies oil to the investment wherever borax is likely to penetrate, using for this purpose a camel's-hair brush. He was led to do this by the impression that the chipping was due to borax coming in contact with these portions of the teeth. This the oil effectually prevents, and he writes that since adopting this procedure his failures from teeth chipping at the edges have been lessened fully ninety per cent.—W. H. T.

CELLULOID DENTURES.—In continental Europe a large number of celluloid dentures are made every year and are giving general satisfaction. Proper methods are employed in their construction and better material is used than that sold on this side of the ocean. The "French Company of Celluloid," of Paris, makes a celluloid which is far superior to that sold by our dental supply houses, but unfortunately that firm has not yet offered it for sale to the dental profession. Through indirect sources I have obtained a small quantity of it in the shape of sticks, and, with the aid of a series of dies and counterdies of different sizes, blanks have been made. These blanks I have put aside in a dry place to season. Their exposure to sunlight has caused them to fade slightly, and this gives them a still more natural appearance. It is my intention to give my blanks some few years to season, and when ready to use them I expect to have a material far superior to any ever placed on the market.

Very little has to be said about repairing celluloid dentures, as they rarely need repairs, excepting the replacing of a tooth. This is done very much as with a rubber denture. After removing the wax the filed portion should be rubbed with acetone, a small piece

of celluloid placed in position, and the case pressed as if moulding a plate. For partial dentures the process is identical, with the exception that the blank is trimmed to suit the case in hand.—DR. LOUIS F. BOUCHE, Winnipeg, Manitoba, Canada.

ORTHOFORM OINTMENT.—Dr. A. D. Kyner, in *Items of Interest*, reports success in use of orthoform ointment, twenty-five per cent. in cases where arsenic had been in contact with gum.

Current News.

REPORT OF THE COMMITTEE ON CONGRESSES: FOURTH INTERNATIONAL DENTAL CONGRESS, ST. LOUIS, 1904.

In the matter of the organization of the Fourth International Dental Congress, designated by the International Dental Federation to be held in Saint Louis, August, 1904, the Committee on Congresses for the Exposition find the following facts and reach the subjoined conclusion:

At the meeting of the National Dental Association of the United States at Niagara Falls, in 1902, a communication was forwarded to the International Dental Federation at Stockholm to designate the St. Louis Exposition as the place and August, 1904, as the time for holding the Fourth International Dental Congress. This communication was conveyed by a Committee of Three to Stockholm. On the day following the departure of the committee the National Dental Association appointed a Committee of Fifteen to organize and conduct the Congress, subject to the acceptance of the invitation by the International Dental Federation.

The International Dental Federation accepted on the 18th of August, 1902, at Stockholm, the invitation of the National Dental Association, of the governor of the State of Missouri, the mayor of the city of St. Louis, the Universal Exposition of St. Louis, and various dental societies, and decided that the Fourth International Dental Congress should be held in the month of August, 1904, in

the city of St. Louis. They further appointed a Committee of Nine—all Americans—to assist in the organization of the Congress.

A question then arose as to which of the committees thus appointed—the Committee of Fifteen or the Committee of Nine—had the power to organize the Congress. Relative to this question also came up the point as to the official connection between the National Dental Association and the International Dental Federation. On this point there is much divergence of opinion. The facts seem to be established, from the minutes of the National Dental Association, that at the Omaha meeting on August 30, 1898, a Committee of Nineteen was appointed to represent the National Dental Association at the Third International Dental Congress in Paris, 1900; that this official committee took part in the Third International Dental Congress, at which the International Dental Federation was formed; that the duties of this Federation, as set forth in the minutes of the Paris meeting, were the appointment of an International Commission on Instruction and to prepare for the next International Dental Congress; that the National Dental Association of America, at their meeting in Milwaukee in August, 1901, received the report of the Chairman of the Committee of Nineteen for the International Congress at Paris, 1900, which report contained an account of the formation of the International Dental Federation and the part said committee played therein. They accepted the report and ordered it printed.

Whether or not the acceptance of this report, which seems to have been made in the language ordinarily used in the submitting of similar reports, legally binds the Association to a recognition of the Federation has been the point under discussion. The language used on page 239 of the Transactions of the National Dental Association for 1901 is, "On motion, it was accepted and ordered printed." The report was included in the minutes, which were read and approved at the next day's meeting. On page 238 a similar phraseology is used in reference to another report. On pages 222 and 228 the same occurs. On the latter page, also, the Annual Report of the Treasurer was "received and, on motion, accepted." From this it would appear that the National Dental Association is a member of the Federation. This view would also seem to be recognized by the National Association itself in forwarding to Stockholm the invitation to hold the Fourth International Congress in St.

Louis, the invitation reading: "The National Dental Association of the United States of America hereby invites the Committee of the International Dental Federation *having in charge the promotion of the Fourth International Dental Congress*," etc.; and further in the appointment of a Committee of Fifteen, that should be provisional only until said invitation was accepted.

But this does not seem to us at this juncture to be the crucial point. Had the International Dental Federation instructed the Committee of Nine definitely as to their duties, or had they, in response to the joint communication of the two committees in November, ruled positively on the point; or had they, in response to our communication to them at Madrid, laid down the procedure of the Federation, the decision would be easily arrived at.

For want of such action we are obliged to consider the matter purely from the stand-point of precedent and exposition expediency.

To resume the findings of facts: The Committee of Nine was appointed by the Federation at Stockholm presumably without knowledge of the appointment of the Committee of Fifteen. Unfortunately the powers of the Committee of Nine are not set forth definitely and precisely, either in the official acceptance of the invitation or in the letter of appointment to the individual members.

A praiseworthy attempt was made by the two committees at Cincinnati to combine their work, but was refused on the part of the Committee of Nine on the ground that such amalgamation was not within their instructions. The matter was then referred, in a joint note from the two committees, to the Chairman of the Executive Committee of the Federation for decision, but the answer was returned that he did not consider himself authorized to select between the two committees, and consequently was obliged to refer the answers to the questions to the next session of the International Dental Association, to be held in Madrid in April, 1903.

On February 6 the president of the Exposition appointed as an organizing committee for the Fourth International Dental Congress on the part of the Exposition, the Committee of Fifteen of the National Dental Association, following the precedent of this and other expositions of making national associations responsible for the success of the congresses. The powers of the committee were, however, left in abeyance pending decision of the questions hereinbefore set forth. As a result of the various meetings and of much correspondence, the Exposition sent to the Madrid meeting, by a

special delegate, a communication,—copy of which is hereto attached,—particular attention being called to the phraseology of the instructions to the Committee of Nine on the part of the Federation, and an interpretation asked therefor. The reply of the Federation to this communication, which has just been received, does not meet these points, but rather suggests an amalgamation of the two committees, the Committee of Nine having the power to raise its representation to the numerical equality of the Committee of Fifteen.

We are convinced that it is impossible, in view of the present status of the discussion, to make, at the present time, an effective consolidation of the two committees. We are sure that the International Dental Federation would agree with us were they in closer touch with the situation. So large a committee is also impractical from an administrative stand-point. There seems to be nothing left in order to create a successful congress except for the Exposition Company to define the duties of the Committee of Organization of the Exposition, and suggest the line of co-operation of the Committee of the International Dental Federation.

The fact that the International Dental Federation does not specifically set forth the duties of the committee appointed by it, and hesitates after various appeals to interpret their instructions to the committee, would seem to imply that there was no settled line of policy on such matters, and that the Federation does not desire, without further authority from an international congress, to formulate one.

In the absence of such definite statement as to procedure, it would seem to devolve upon the Universal Exposition of 1904 to follow the precedents heretofore established and organize the Congress, through its duly appointed committee, depending upon the International Dental Federation, through its committee, to interest alike the dentists of all countries and to secure international co-operation. As to the precedent to be followed, we call attention to the action of the Second International Dental Congress at Chicago, in 1893, whereby the organization was continued to the Paris Exposition of 1900. The authorities of the latter Exposition assumed the right to appoint a National Committee of Organization, which provided the ways and means, issued the invitations, appointed the committees, and nominated the officials of the Third International Congress.

WE CONCLUDE that, in view of the nearness of the Exposition, and the necessity of immediate organization, and in view of the impossibility of amalgamating the two committees, it is imperative to give the Committee of Organization of the Exposition the power to proceed energetically without further delay. We would respectfully suggest that this is in no wise to be considered a precedent for future expositions, or an attempt to define the powers of the International Dental Federation or the National Dental Association, but an *action demanded by the emergency of the situation*; and we further recommend that at the time of the Congress in 1904 a definite form of procedure for holding future congresses be fixed.

We therefore instruct the Organizing Committee of the Exposition to proceed in the work of organizing the Congress, to obtain the ways and means therefor, to issue invitations, to appoint the necessary committees for preparing the programme, for the entertainment of guests, for nominations, etc., and on such committees to give equal representation in membership to the Committee of Nine, and in all matters to take due care of the rights of every foreign nation and of the obligations due to the International Federation as the authorizing body of the Congress.

(Signed)

HOWARD J. ROGERS,
Director of Congresses.

Approved:

FREDERICK W. LEHMANN,
Chairman Committee on Congresses.

TENNESSEE DENTAL ASSOCIATION.

THE next meeting of the Tennessee Dental Association will be held at Lookout Inn, Chattanooga, Tenn., July 23, 24, and 25, 1903. The outlook is bright for the best meeting in the history of the Association. Contributions have been promised from many eminent in the profession from Tennessee and other States.

A one-and-one-third-fare rate on the certificate plan has been secured. Those wishing to attend the meeting of the National Dental Association at Asheville, N. C., can deposit return tickets with agent at Chattanooga and take up same on return trip. All members are urged to be present, and a cordial invitation is ex-

tended to all ethical dentists to be present and take part in the proceedings.

The Tennessee State Board of Dental Examiners will hold its meeting at the same time and place.

A. SIDNEY PAGE,
Secretary.

ILLINOIS STATE DENTAL SOCIETY.

At the thirty-ninth annual meeting of the Illinois State Dental Society, held in Bloomington, May 12 to 14, 1903, the following officers were elected:

President, F. H. McIntosh, Bloomington; Vice-President, C. C. Corbett, Edwardsville; Secretary, Hart J. Goslee, Chicago; Treasurer, C. N. Johnson, Chicago; Supervisor of Clinics, C. E. Bentley, Chicago; Librarian, J. T. Cummins, Metropolis City.

Executive Committee.—F. B. Noyes, Chicago.

Committee on Science and Literature.—G. V. Black, Chicago.

Committee on Art and Invention.—J. H. Prothero, Chicago.

Members of Executive Council (three years).—A. H. Peck, Chicago; G. W. Gittmar, Chicago; W. A. Johnston, Peoria.

The fortieth annual meeting will be held in Peoria the second Tuesday in May, 1904.

HART J. GOSLEE,
Secretary.

CONNECTICUT STATE DENTAL COMMISSIONERS.

GOVERNOR A. CHAMBERLAIN, of Connecticut, appointed, on March 19, 1903, for Dental Commissioners to serve for two years from July 1, 1903, the old Commissioners, as follows: Dr. Edward W. Pratt, President, East Hartford; Dr. J. Tenney Barker, Recorder, Wallingford; Dr. William H. Loomis, Rockville; Dr. William E. Hyde, Danielson; Dr. Horace Bascom, New Haven.

On May 1 Dr. Wm. E. Hyde sent in his resignation, to take effect immediately, and Dr. Theo. S. Rust, of Meriden, was appointed for the unexpired term and for two years from July 1, 1903.

Dr. Horace Bascom also resigned, his resignation to take effect on July 1.

THE International Dental Journal.

VOL. XXIV.

AUGUST, 1903.

No. 8.

Original Communications.¹

THE PRINCIPAL MOLAR IN MAN, AND ITS RELATIONS TO, AND BEARINGS UPON, THE OTHER TEETH.

BY E. A. BOGUE, M.D.

By principal molar I mean the first permanent molar, or what is often called the sixth-year molar.

It gets its start soon after birth. Three to four years after the temporary teeth are all in position, and all in use, this principal molar begins to make its appearance through the gum, generally at about the age of six years. As all present know, it erupts next back of the last temporary molar.

When these principal molars are nearly erupted an impression of all the teeth will indicate, with almost absolute accuracy, if there is to be any serious irregularity among the permanent teeth. This may appear strange, and perhaps incomprehensible, to those who have given the subject of dental dislocations little or no attention, but I think I shall demonstrate to your entire satisfaction the truth of my assertion.

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

I am not proposing to tell you new things, but to recall to your attention old things that you know quite as well as I.

First, then, this principal, or first permanent, molar has in the lower jaw five cusps (though sometimes the fifth is but a rudimentary one) and four in the upper jaw. These cusps are of great consequence to the teeth from the very beginning. They assist in guiding the upper and lower teeth to their proper positions relative to each other, and when these positions have been attained they assist in holding them there. If, by any chance the teeth have assumed improper positions, and the cusps of the upper and lower teeth have interdigitated improperly, they assist in holding the teeth in their improper positions just about as thoroughly.

As these four principal molars erupt, the lower ones being a little in advance of the upper in point of time they should also be one cusp in advance of the upper in point of position; that is to say, the upper molars should sit astride of the outer, or buccal, cusps of the lower molars, but just behind the anterior cusps.

We all know that just room enough is required between the principal molars and the cuspids for two bicuspid. If, therefore, the proper occlusion of these principal molars fails, there is bound to be an irregularity of some kind. If the upper molar is in advance of the lower, there will not be room between that molar and the cuspid for the two bicuspid, and we shall have either an irregularity of the cuspid or of one or both of the bicuspid.

If, on the other hand, the lower molar is too far in advance of the upper, the irregularity will be most manifest among the lower teeth.

I call it the principal molar in deference to the expressions of famous anatomists more than one hundred years ago; Blainville, for example, who is much quoted by Owen; besides, I find the name so appropriate, in view of more modern discoveries, that I think we shall all do well to adopt it.

I wish now to call your attention to Dr. Thompson's picture (Fig. 2), which you will find in Kirk's "American Dentistry."

You notice that the principal molar is, as above stated, almost exactly in the middle of the arch from before backward. You will notice that the principal molar, the second molar, and the wisdom-tooth are three, and that they are all first teeth, notwithstanding they are also permanent teeth, and that they all come into the row of teeth back of the temporary set, and that the addi-

FIG. 1

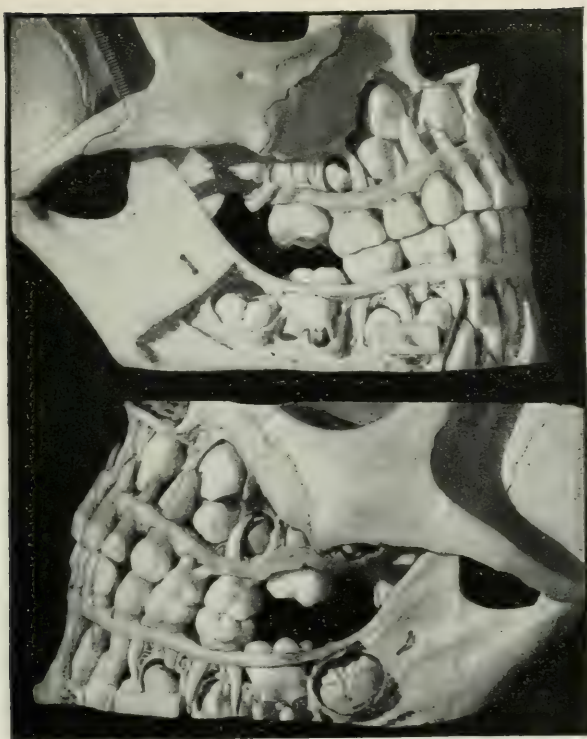


FIG. 2.

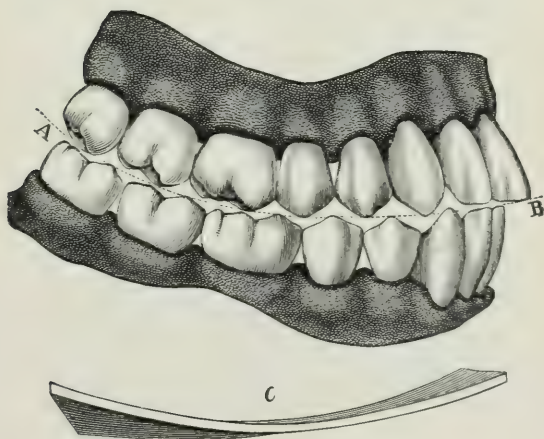


FIG. 3.

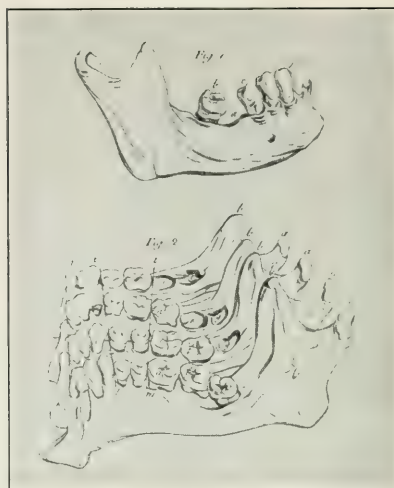


FIG. 4.



tions to the skull, to the jaws, and to the alveoli of those jaws necessary to accommodate these teeth all take place between the time of the eruption of the first or principal molar and the eruption of the third molar or wisdom-tooth.

Thus we see that the growth necessary to the completion of the countenance, that growth which we say comes with increased years, that growth upon which depends so much the character of the mature face, is largely dependent upon the presence of these three molars for such development. Now turning to the forward lateral portion of the dental arch we find again three teeth,—two bicuspids and the cuspid. These complete the line and the curve from before backward. Forward of the cuspid stand the two incisors, which complete the arches of the teeth.

Nearly all of the growth that has taken place in both the jaws since the eruption of the principal molar, at about six years of age, has taken place posteriorly to, and above, this molar.

This growth has occurred in the interior of the skull and leaves the anterior face of this molar as the middle of the dental arches.

The lower model in Fig. 4 shows as nearly a perfect set of teeth, both in form and arrangement, as we shall often find. Not only are these teeth theoretically perfect, or nearly so, in position, but I was not able to find the least trace of decay at any point. The lady to whom they belonged was probably about thirty years of age. The upper model shows us a case in which the upper principal molars developed a very little farther forward than they should have done. The result is a slight prominence given to the cuspids, imparting to one of the mildest and gentlest of faces a sort of fierce look when the person shows the teeth.

There is also a depression at the incisal region that accentuates still further the prominent cuspids.

The principal molar is, indeed, the key-stone of the dental arch, and when it is realized that every member of that arch is of a size exactly appropriate to the perfect arch, it is seen that any variation in the position of this key-stone causes a variation in the entire arch.

Dr. Talbot, in his "*Irregularities of the Teeth*," fourth edition, page 63, says, "If the teeth antagonize uniformly, the arch will enlarge around evenly. If the molars are fixed, the alveolar process will expand anteriorly." Also, "The position and shape of the processes and their relation to each other are governed entirely by

the shape and size of the teeth and roots, and not by the shape of the jaw-bone proper."

Please understand that I have no quarrel with the doctrine of development. On the contrary, I recognize therein the Creator's method of creation, but I have a very decided objection to the doctrine that a six-foot Irish father, strong and vigorous, can give his teeth to the jaw of a five-foot French mother, frail and thin, and can combine these two qualities in the progeny of those two parents. That is not the way that nature works, and for us to attempt to evade our responsibility as scientific men, practising for the children a calling that has much to do with all their future lives, both as regards health and appearance and powers of expression, whether vocally or by nobility of countenance, is beneath our dignity as members of one of the learned professions.

When Nature builds a set of teeth she builds a jaw to correspond, and if that jaw comes to maturity and the teeth are developed and find their proper positions along nature's lines without accident or improper meddling, it will be found that not only is the jaw large enough for the teeth, but also that under these conditions whatever facilitates the natural and proper development of that jaw and the natural and proper placing of those teeth into the most perfect dental arches also facilitates the development of the other facial bones. The ethmoid, sphenoid, and palate bones, as well, have developed nicely, and the sense of hearing and smelling and the power of mastication, as well as enunciation, are all promoted by this normal dental arch development.

In order to guide the teeth in their development into proper positions, it is evident that it is necessary to know precisely what those proper and natural positions are. Hence it is necessary for us to study carefully the arrangement of a good many sets of thirty-two natural teeth. There is, of course, no absolutely perfect and typical set of teeth, any more than any perfect part of the body. We should study these complete sets from a period pretty well along in life, when the teeth shall have suffered the wear and tear of forty years or more, and thence backward through the various stages of accident and development to the very beginning. Upon such a study as this will depend our ability to guide and to preserve in good order the teeth of our patients from infancy to old age. If we do anything to disturb the natural ideal position of the teeth we interfere with nature's process of arrangement, as well as with that of self-cleansing. If we interfere with the

FIG. 5.

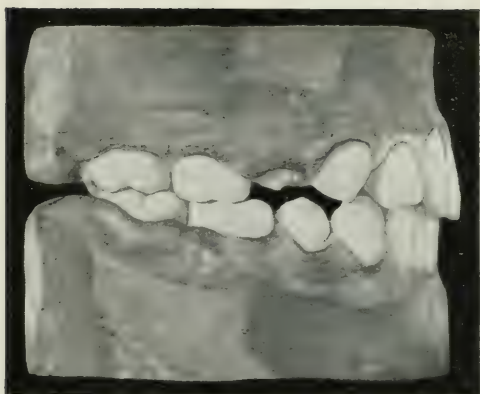


FIG. 6.



FIG. 7.

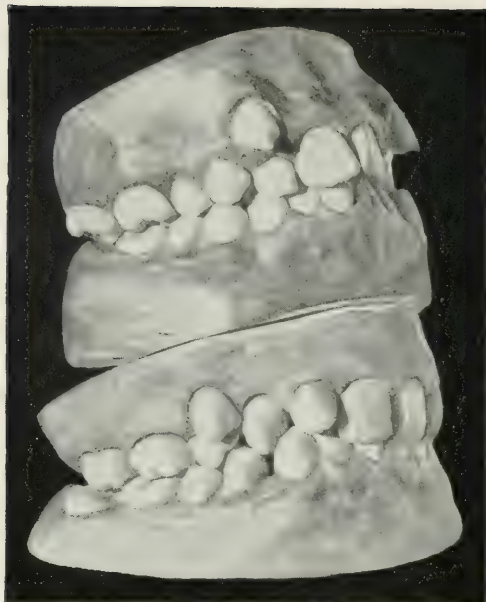


FIG. 8.

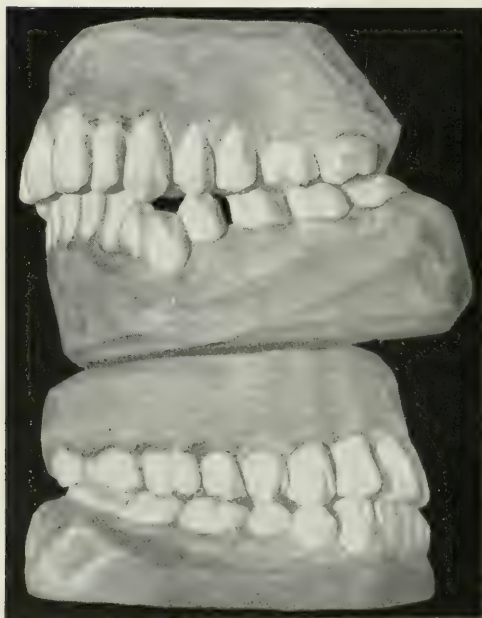


FIG. 9.

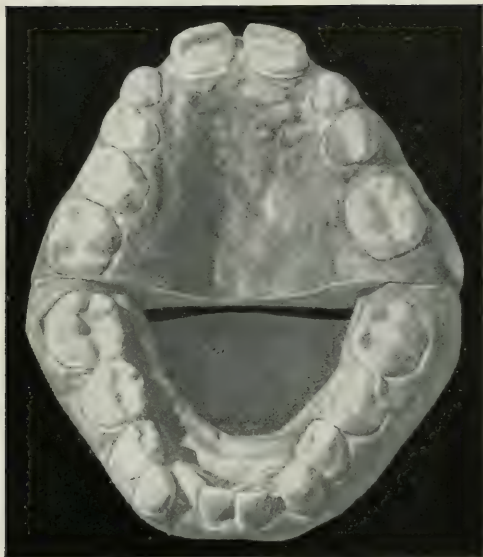


FIG. 10.

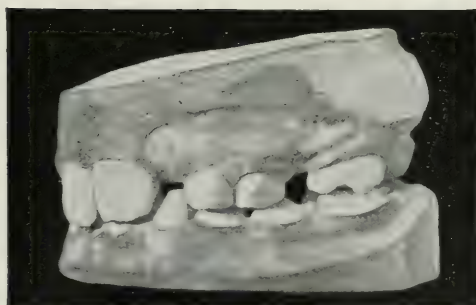
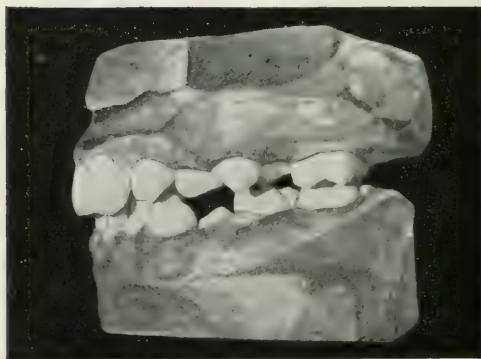


FIG. 11.



FIG. 12.



cleansing, we promote decay, for a clean tooth never decays; and when we permit the teeth to go astray because of what we call accidental circumstances that occur during the processes of formation and development of the permanent teeth, we contribute to their loss.

We will now follow through a few cases illustrating certain conditions that are frequently found in practice.

Fig. 5 shows the first permanent molars above and below in perfect occlusion, and presupposes room enough forward of these teeth for all the remaining teeth to erupt with perfect regularity.

Please remember that an amputation or an extraction is no cure for a dislocation of any member. It is only an evasion of the difficulty, and a substitution of one of *our* mistakes for a mistake of Nature's, to the greater detriment of the patient.

The models exhibited in Fig. 6 both show in a marked degree the important office of the principal molars, as shown in the previous model, to sustain the jaws during the shedding of the temporary teeth and their replacement by the permanent ones.

The lower model (Fig. 6) shows the irregularity produced by lack of room, owing to a dislocation of the upper molar. Imagine what would happen to these jaws were the principal molars to be extracted at this age,—about ten years.

The two cases shown in Fig. 7 exemplify a condition of the principal upper molar that is not quite accurate, and would *a priori* indicate an irregularity of the molar and bicuspid teeth, and possibly of the cuspids, owing to the upper principal molar being one cusp in advance of what it ought to be. As an actual fact you see that the cuspid in one case and the bicuspid in the other have erupted out of their proper place and are unable to resume their places in the arch because the upper molar is too far forward and does not leave enough room for the other permanent teeth in front of the upper molars; hence we find in each case a tooth crowded out of position.¹

¹ It is probable that the somewhat more anterior position of the molar, as well as that of one or both of the bicuspids, is secondary, and the effect of a too early shedding of the posterior premolar, or a delay in the eruption of the canine. Hence it may be better, by all means safer, to say the principal molar *assumed* a wrong position, not erupted in such.

I am indebted to Dr. A. Hrdlicka, Curator of Physical Anthropology in the National Museum at Washington, Smithsonian Institution, for the above note, as well as for a number of suggestions which have increased the accuracy of this communication.—E. A. B.

The two cases shown in Fig. 8 represent the eruption of the *lower* principal molar forward of what it ought to be, and a consequent diminution of room in the *lower jaw*, with the effect of throwing the somewhat belated first bicuspid far out of line in the upper model, while the cuspid is rotated upon itself and thrown inward. In the lower model the impulse forward has been extended to the cuspids and incisors, giving the young lady a somewhat square, unseemly front part of the lower jaw.

Figs. 9 and 10 show the model of a boy eight years old in May, 1900. It exhibits the left upper molar somewhat more than a cusp in advance of where it should be relative to the lower molar. In this case the second upper temporary molar had fallen out of its own accord, and the permanent upper molar was found in the position which it occupies on the model when this impression was taken. A fixture was put on to press this upper molar back to place. About that time the bicuspids began to erupt, and presented the appearance shown in the next two slides (Figs. 11 and 12).

Upon succeeding in getting the molar back to its proper position, the bicuspids on each side of the mouth were easily drawn into their places in about ten days. Retaining-plates were kept in position until the cusping of the upper and lower teeth with each other was sufficient to hold them in place so that the heavy pressure exerted by the tongue on one side, and lighter but continuous pressure of lips and cheeks on the outer sides, completed the oblong form of the two arches, and the result is what we see in the model of the finished case, which I present to you also (Figs. 13 and 14).

Fig. 15 contrasts the two models before and after the operations for correcting the malocclusion.

The point to which your attention has been especially though indirectly called during all this description is, that the removal of one or more teeth from either of the dental arches does not and cannot correct any irregularity of any kind. *Nor does it aid in correcting such irregularity.* I beg your careful consideration of this statement after reading it over. I can conceive of cases of irregularity having been neglected until maturity that might be somewhat benefited by the removal of one tooth, but I cannot conceive of any case where the extraction of four teeth could ever be of sufficient benefit to compensate for the extra mischief done; nor is it ever good practice to extract permanent teeth from children or young persons. All necessary corrections of irregularities

FIG. 13.

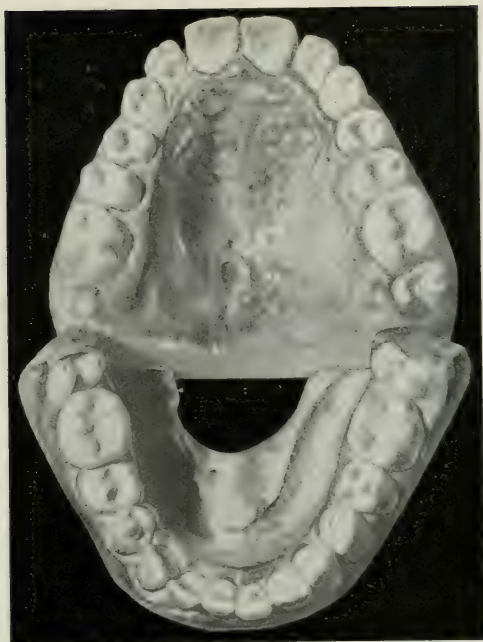
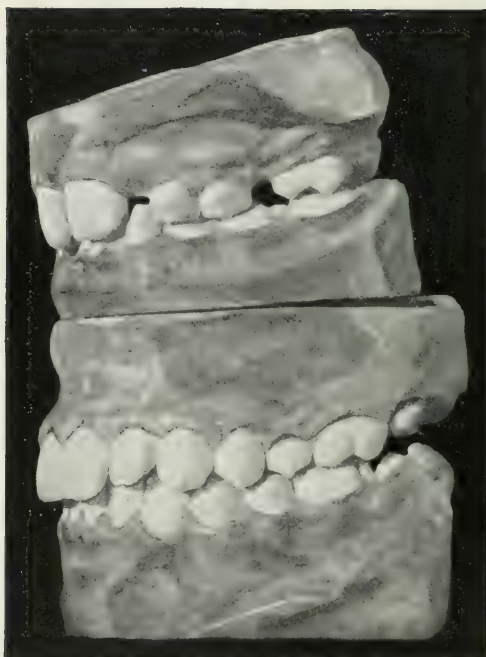


FIG. 14.



FIG. 15.



can be done more promptly and more easily for young people with all the teeth in place.

When this cusping of the upper with the lower teeth is carefully considered, it is recognized that the loss of even as much material as would be removed by a thin file passed between two teeth works a damage difficult, if not impossible, to wholly repair. On the other hand, teeth that are irregularly situated, that is, dis-located, submit to being drawn into their proper places, with the remaining teeth all in position to assist in holding them there, much more readily than they submit to be pulled into places where they did not originally belong. In the former case the alveolus bends a good deal, submits to absorption somewhat, and the teeth are brought into their proper arches and their proper contact with each other, and are held by natural forces, prominent among which is their proper cusping with the antagonizing teeth of the opposite jaw. In the latter case, when teeth have been extracted to be regulated, the teeth are forced against a wall of alveolus that was designed to hold them for life. The force required and the time consumed to draw them into improper positions is so much greater than what would have been required had all the teeth remained in their proper relations with each other, that from two to three years are frequently consumed in obtaining only a fair condition of regularity, with no proper occlusion at all and no possibility of properly grinding the food which is taken.

I now call your attention to the main lesson that we may draw from all which has preceded.

We may at about seven years of age, perhaps even sooner than that, accurately foretell whether or not any irregularity is impending among the molar and bicuspid teeth of a child.

And we may, as soon as the first molar teeth are developed enough to attach rings to them, or sometimes to tie a wedge between them and the temporary molars, correct such irregularities surely and painlessly.

The upper model in Fig. 16 shows the mouth at six years of age, with the first permanent molars, erupted and slightly in contact, occupying their normal position,—namely, the lower molar one cusp in advance of the upper. The temporary teeth are in their places, and there is nothing especially noticeable, certainly nothing requiring attention among the teeth. Ten months later the lower model was taken. Here we find the upper molar has

advanced one cusp forward of the position it ought to occupy. The four temporary teeth above and below are still in place, but the upper ones have been pushed forward of the position which they occupied ten months previously. The permanent central incisors have erupted and stand at a V-shaped angle, nearly if not quite three-eighths of an inch forward of where they should be. Now the question arises, How did this extreme prognathism of the upper jaw take place in so short a time, and why, and what should be done to correct it, and when should it be done?

Fig. 17 is the front view of the same mouth, taken at the same dates as the previous slide, showing very clearly the good occlusion of the temporary teeth previous to the growth of the permanent molars and the malocclusion of these same teeth when the permanent molars finally erupted to the length shown in the picture. These models show to me a mouth-breather, with a slight diminution of width in the region of the cuspids, which made it disagreeable to the child to close the teeth naturally, so she acquired the habit of closing to one side to get rest.

During this period the permanent upper molars grew down and failed of proper occlusion with the lower ones, and so acquired a position in advance of what they should have had. This, unless corrected, will surely cause irregularity among the teeth forward of these molars, because of insufficient room for them to erupt into their proper positions. My own conviction is, and has been for some time, that if the principal molars can be got into their proper relative position at or shortly after the time of their eruption no serious irregularity will ever occur to any of the grinding teeth. Irregularities arising in the incisal region are extremely easy of correction providing the principal molars are in their proper positions.

MEDICAL ASPECTS OF DENTAL LESIONS.¹

BY SAMUEL A. HOPKINS, M.D., D.D.S., BOSTON, MASS.

WHEN we consider what an inviting field for medical investigation the mouth and the teeth furnish, it is difficult to understand why medical men have so long failed to appreciate the agency of the teeth in giving rise to and in aggravating diseases in other

¹ Read before The New York Institute of Stomatology, April 7, 1903.

FIG. 16.

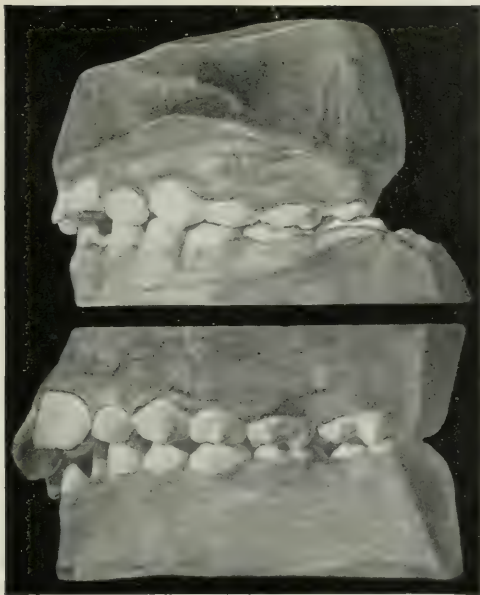


FIG. 17.



organs. Not only have dental lesions been left for the dentist to treat, but the physician has too often failed to recognize their importance in diagnosis. Whether it be ears, throat, nose, eyes, glandular diseases, or diseases in more remote organs, almost every case reported as having its origin in diseased teeth bears with it a confession of failure on the part of the physician to make an early and successful diagnosis.

In the text-books we find brief allusions to the teeth as possible disturbers of neighboring organs, but except where the first dentition is made the scape-goat to bear the burden of every childish ailment, very little is said which would serve as a guide to the physician in making a diagnosis of diseases having their origin in the teeth and surrounding tissue. I can imagine no field which would yield such an abundant harvest if the reaping-knife of medical investigation could be thrust in.

There are no diseases of the ear, no diseases of the eye, no diseases of any other part of our anatomy, that can be exorcised so quickly as those which have their origin in diseases of the mouth and teeth.

Almost as soon as the diseased tooth has been discovered, behold! a magic wand is waved over the suffering patient. Pain gives way to amazement, amazement to gratitude, and gratitude to worship, and the intelligent physician who has been quick to diagnose and quick to act is the idol at whose shrine the grateful patient bends his knee.

It may, then, be well to refresh our memories by referring to some of the diseases which have their origin in dental disturbances, and, by way of reciprocity, to refer to some of those cases in which general diseases affect the teeth and associated parts. We may safely pass over the diseases which come with the eruption of the first teeth, because undue prominence is apt to be given to this perfectly normal physiological condition as a feature in the diseases of childhood. We are apt to forget that during this period not only is the mouth undergoing a change, but the follicular apparatus of the stomach and intestinal canal is undergoing rapid development, and a remarkable change is taking place in anticipation of the mixed diet which is to come with the development of the first teeth.

Not only the alimentary canal, but every organ in the body is undergoing rapid development, and the nervous system, particu-

larly the cerebrospinal system, is in a condition of exceedingly high functional activity, wherein it responds quickly and in an exaggerated degree to an irritation that would go unnoticed at a less excitable period. It is no wonder that excess or irregularities in diet, be they ever so slight, should be able to throw the delicate mechanism of development out of gear. It is no wonder that any exposure to cold or contagion should find the system of the teething child an easy mark for the destructive arrows of disease. It is no wonder if at this period the least departure from hygienic principles should be punished with quickly following illness, nor is it any wonder that some irritation should be manifested as a result of the efforts of the teeth to force their way through the gums. It is well to remember, however, that the diseases which we are apt to attribute to first dentition would seldom arise were it not for the fact that the condition of the infant organism is so susceptible at this period that the slightest influence has exaggerated power to disturb the entire system.

It is not quite the same with second dentition, for here, with the exception of those mysterious changes which take place at puberty, changes which are psychological as well as physiological, and which we can neither fully understand nor explain,—with this exception we have the body unaffected by unusual changes in the progress of its development. With the eruption of the sixth-year molars we frequently have a period of general depression and nervous irritation. If we recognize this condition, it will serve to make us more patient and forbearing if the little victim gives way to his feelings and is not quite as amenable to discipline as we could wish. Usually this passes away as soon as the teeth come through, and treatment is seldom required. It does, however, happen at this period that because the gum is swollen and painful to chew upon the child will bolt his food, washing it down with water or milk, or will refuse altogether to eat solid food, thus giving rise to serious digestive disturbances. In a like manner, when the bicuspid come through, pushing before them the molars of the deciduous set, digestive disturbances again may arise from the inability or unwillingness of the little patient to chew his food. It will be a great gain to the child if the physician is quick to discover the source of these slight troubles and take the necessary steps to relieve them. Acting in the same way, a carious and painful temporary tooth will break up the habit of mastication and bring on

diseases of the stomach and intestines that are capable of wrecking the happiness of a lifetime.

It is imperative, then, that we should be on the lookout for disorders of second dentition, and, moreover, it is exceedingly important that the temporary teeth should be kept free from disease in order that mastication may be properly performed. The physician will find, also, that many cases of stomatitis of an ulcerative type may be accounted for by the eruption of sixth-year molars and bicuspid teeth. These cases all yield to simple treatment if the source of the irritation has once been discovered.

Ordinarily the eruption of the twelfth-year molars is unnoticed, yet it would be well to remember that they are capable of setting up a severe train of nervous and constitutional symptoms. This is particularly true in cases where the jaw is short and the teeth are crowded. If hysteria, fretfulness, loss of appetite, irritation of the eyes and ears, with anæmia, occur about the tenth to the twelfth year, it will pay to have a careful examination made to discover if a lower second molar painfully pushing its way towards the surface may not give rise to these symptoms. Frequently the X-ray will have to be employed to give the exact position of the tooth in the jaw and its relation to the other teeth, as upon this knowledge will depend the treatment. So much for the disorders which the eruption of the teeth give rise to.

Before taking up the somewhat formidable list of evils which the teeth are capable of producing, it may be well to mention the fact that not only do diseases of the teeth produce constitutional disturbances, but constitutional disturbances may reveal themselves in severely painful attacks of odontalgia. We have all, I fancy, a certain chamber of horrors in our memory, the door of which we keep closed even to our intimate friends. Occasionally we are obliged to go in ourselves and view the unlovely skeletons of our earlier mistakes. It is not a pleasant duty, and we close the door as quickly as possible and pray that the repulsive adornments may not be increased. Most of us who have practised dentistry remember having been baffled almost to the point of desperation by severe pain, often recurrent and sometimes long continued, in a tooth or teeth that were apparently sound. Often mistaking such a condition for the pain arising from exostosis or from the deposit of pulp-stones, we have destroyed the pulp, only to have the pain continue or pass into an adjoining tooth. Too late we have dis-

covered that malaria or rheumatism, or some other general disease, had started up a train of symptoms that culminated in this painful condition of the teeth.

It will never be easy to make the diagnosis, but it will often serve us in time of need to remember that such reflexes may occur not only from malaria and rheumatism, but from diseases of the eye and stomach as well. During the menstrual period the teeth are frequently sensitive and uncomfortable. Toothache during the nausea of sea-sickness is of common occurrence, and is relieved by the vomiting which follows. Hysteria finds the teeth a favorite part of the body in which to end its erratic course, and a disorder of the brain may readily involve a perfectly sound set of teeth. As the human organism is a very perfect unit, it is difficult to imagine any serious affection of one part that may not give rise to reflex symptoms in another, and while in the present state of our knowledge it is impossible to classify these symptoms with accuracy, yet a proper realization of the broad principle of unity in all bodily ailments may help us to avoid serious mistakes in diagnosis.

We now come to a consideration of diseases of neighboring organs induced by carious teeth, or by abscesses or other abnormal conditions of the teeth and surrounding tissue.

One of the most offensive conditions which diseases of the teeth give rise to is that which is accompanied by chronic discharge from the nose. Such a discharge may be due to syphilis, lupus, necroses of the bones or cartilages, or inflammation of the frontal and maxillary sinuses, but is very commonly found to have its origin in a diseased tooth. A glance at the relation of the upper incisor teeth to the nasal fossa and the relation of the posterior teeth to the antrum of Highmore will immediately discover the means by which an alveolar abscess, or even less violent inflammation of the pericemental membrane, may be communicated to the frontal and maxillary sinuses and other neighboring organs and produce a train of symptoms difficult to distinguish from chronic nasal catarrh.

So frequently is a diseased tooth the seat of the trouble that it should be a matter of routine to have an examination of the teeth made in every such case. I do not mean a cursory glance by the physician, but the most searching tests of all the upper teeth should be made by a competent dentist. After excluding syphilis and lupus, the chances of the teeth being involved are very great. In

the case of the front teeth the discharge is usually not very offensive. When the antrum is involved by diseased conditions of the posterior teeth the thickening of the mucous membrane blocks up the opening so that the discharge is retained until it becomes in some instances as offensive as that which accompanies syphilis. There is a long train of general symptoms, chill, fever, prostration, etc., which I need not go into, but I wish to emphasize the following suggestion, and beg of you to accept it as a rule of practice.

Given chronic nasal catarrh, always have the teeth carefully examined. Another suggestion in this connection,—having removed the cause, do not do too much in the way of treatment. There is a dangerous tendency to keep up the irritation by the too frequent use of the probe and syringe. Secure the drainage and, after one or two washings with non-irritating antiseptics, give nature a chance. It is true that she may be more interested in raising a group of pyogenic bacteria than in the cure of the patient, but there is a good prospect of her effecting a cure if not interfered with too much.

Besides the nasal inflammation which arises from a diseased anterior upper tooth, inflammation extending from one of the lower teeth, particularly one of the lower wisdom-teeth, has also been known to give rise to inflammation of the nasal mucous membrane and a consequent discharge from the nose. We may also have an inflammation from a tooth, which inflammation will pass over the roof of the mouth and palatal arch, and, extending to the pharynx, cause catarrhal pharyngitis, or it may pass to the middle fossæ of the nose, causing hyperæmia of the turbinated bodies and acute rhinitis.

Consideration of the subject of nasal catarrh brings us to the subject of otitis media. I do not know but the aural specialist will consider my statement too sweeping, but I am led to believe from my own observation and from a study of the literature of the subject that disease of the middle ear is almost always preceded by a catarrhal disease of the nasal mucous membrane, and this, we have just seen, is frequently provoked by a diseased tooth. Therefore, otitis media may be, and frequently is, caused by a diseased tooth. Disease of the ear may be reflex in its nature or may be the direct extension of inflammation from a tooth. In some cases this inflammation may result in the closing of the Eustachian tube. The

closing of the tube produces a partial vacuum in the canal and tympanic cavity. The pressure of the outside air against the membrana tympani drives it inward and stretches it to its utmost capacity. This tension not only causes severe pain, but there is naturally pressure on the blood-vessels. Venous engorgement occurs, and is followed by congestion, inflammation, suppuration, and rupture of the drum-head.

While many cases of direct continuation of the inflammation from the tooth to the ear may be cited, the number caused by reflex action through the vasomotor centres is far greater than we have ever imagined. We know that the normal caliber and tone of the arteries is maintained by the action of the vasomotor centre. The sympathetic ganglia have the power of receiving impressions from one direction and reflexly referring them to an entirely different organ. The sympathetic ganglia are closely connected with the general vasomotor centre, and physiologists have shown that the vascularity of a part may be augmented or inhibited, first, by irritation or stimulation applied to the part itself; secondly, by stimulation of some other part acting through the general vasomotor centre; or, thirdly, by stimulation acting directly on the vasomotor centre. If you keep in mind the fact that the middle coat of the arteries is largely made up of circular muscular fibres, and remember that nerve-fibres belonging to the sympathetic system are distributed to these blood-vessels, you will comprehend how the blood-supply may be altered, not only by the reflex action of an irritation at some remote part, but even by a wave of emotion or a passing thought as exemplified in the action of blushing. The familiar physiological experiment of dividing the cervical sympathetic in a rabbit relaxes the blood-vessels of the ear where the changes can be beautifully observed. The arteries become engorged with blood and minute arteries that had escaped attention become easily distinguished. If the cut nerve be stimulated, the blood disappears and the ear becomes even paler than normal.

We have only to remember that inflammation is the result of congestion and venous engorgement, and we can see plainly how an irritation from an exposed pulp, from pulp-stones, from an abscess, from an impacted wisdom-tooth, from pyorrhœa alveolaris, or other diseased conditions of the gum and mucous membrane of the mouth may be transmitted by the nerve coming from the tooth through some of the sympathetic ganglia to the nerves supplying

the blood-vessels, not only of the middle ear, but to the external auditory meatus as well, and it will readily be seen that there is scarcely a diseased condition of the ear that may not be produced by dental irritation. Twenty years ago Dr. Samuel Sexton, of New York, published, in the *American Journal of Medical Sciences*, what is to my mind the best essay ever written on "The Affections of the Ear arising from Diseases of the Teeth." In reviewing the records of fifteen hundred cases of aural disease he says, "Perhaps one-third owe their origin or continuance, in a greater or less degree, to diseases of the teeth."

It had been my intention to complete this paper by referring to diseases of the eye, the stomach, and the nervous system, which frequently arise from diseases of the teeth, and are cured by the proper treatment of those organs. I have said enough, however, to make it plain that such an association must exist, and to warn the practitioner to be ever on the alert to trace to their proper origin the many unexplained and elusive disturbances now too often overlooked.

I am obliged to close this part of my paper in a somewhat unfinished state, in order to give you an account of some bacteriological work which I feel will be of interest to the dental profession, because it brings out some important characteristics of growth which certain mouth bacteria possess, and has an intimate connection with the prevention of dental and medical lesions.

In recording the experiments which follow, the writer wishes to acknowledge his indebtedness to Dr. Harold C. Ernst, Professor of Bacteriology in the Harvard Medical School, who gave the writer all the facilities of his laboratory and made many very valuable suggestions during the progress of the work.

It has long been known that nearly every common form of bacteria, both of the pathogenic and non-pathogenic variety, finds its way at some time or other into the human mouth. Many forms which appear in cultures or cover-slip preparations from the mouth must be looked upon as but temporary—perhaps only momentary—lodgers in the oral cavity, while others can be observed with relative frequency. Still others are so generally and constantly to be found in the mouth that while it would hardly be safe to say that they were actually indigenous, it can be asserted without hesitation that there they find conditions suitable to their growth and rapid development. Leaving out of consideration the non-pathogenic

varieties and several still unclassified organisms that are slightly pathogenic for small animals, there remain several varieties having undoubted power to produce disease that occur with sufficient frequency in the human mouth to arrest our attention and suggest a possible danger.

The staphylococcus pyogenes aureus is perhaps the most common of the pyogenic forms. Black found this organism in seventy per cent. of the mouths he examined. The observations of the writer would lead him to look upon this estimate as much too high, but the organism is found with sufficient frequency to entitle it to be classified with those bacteria commonly found in the human mouth. The micrococcus tetragenus is found in the sputum of tuberculous patients in nearly every case (Koch, *Mittheilungen an das kaiserliche Gesundheitsamt*, Bd. xi. S. 42), but whether it plays a part of any importance in connection with that disease has not as yet been satisfactorily determined. It is found also in perfectly healthy mouths with varying frequency, and it has been stated that saliva containing this bacillus is fatal to mice and guinea-pigs. In those cases studied by the writer this did not always prove to be the case, but Biondi and others have noticed this fatal action. This action is not to be confounded with the fatal action of the micrococcus of sputum septicæmia or micrococcus lanceolatus, as it is variously called. While the latter organism is, according to Fränkel and Weichselbaum, almost always present in the mouths of those suffering from croupous pneumonia, it is by no means uncommon in the mouths of healthy persons. This organism, the micrococcus lanceolatus, was discovered by Sternberg in 1880, who found it in the oral cavity of about twenty per cent. of the healthy mouths examined. The fact that it has been found in the pleura, in the middle ear, in the frontal sinus, and in the antrum suggests many possibilities of evil. In the experiments about to be described it was exceedingly baffling in its variation in pathogenic power.

Taking these three pathogenic mouth forms, because of their wide distribution and the ease with which they could be found, experiments were begun to explain if possible the facts noted by many observers, that these and other pathogenic bacteria varied greatly in their virulence in different mouths and also in the same mouth at different periods. It was believed that by studying the pathogenic properties of the mouth forms under varying conditions light might be thrown upon the questions of variations in the

severity of disease which are so often observed. It was hoped also to discover some explanation to account for the difference in the virulence of bacteria from different mouths and from the same mouths at different times.

This, it was hoped, might lead to the discovery of some inhibitive force which retarded bacterial activity and which would lead to the prevention of disease. Experiments were naturally first directed towards the saliva, with the hope of finding that some inhibitive action existed in the secretions that would account for the variation in the action of the bacteria of the mouth. This, however, did not prove to be the case. Unsterilized saliva from a healthy mouth did seem to restrict the action of the aureus and the micrococcus lanceolatus by causing increased phagocytosis in the animals experimented upon. Sterilized saliva, however, had no such action, although great care was taken to sterilize it by long exposure to a temperature not high enough to affect the ptyalin. This temperature was found to be slightly below 65° C. Saliva sterilized in this way or by means of a Chamberlain filter (both methods being exceedingly laborious and requiring great care and patience) was not found to have any effect upon the pathogenic action of the bacteria referred to, either when injected in connection with the bacteria or when injected separately, either previous to or after the inoculation of the animal; nor was the growth of these forms perceptibly altered or their virulence changed by the addition of sterilized saliva to the culture medium in which they were growing. It was evident that while the saliva might in an unsterilized condition contain many innocent forms of bacteria which would awaken the phagocytes to action or give rise to enzymes which might change the action of pathogenic forms, it was probable that the saliva freed from bacteria had no such property. It is only fair to state that this result does not accord with the experiments of Sanarelli. (*Centralblatt für Bakteriologie*, Bd. x., 1891, p. 817.)

After much time and labor had been expended in this somewhat fruitless investigation of the possible inhibitory action of saliva, attention was directed to the culture material which, in the form of food particles, desquamated epithelium, etc., exists almost constantly in the mouth and which by alteration in its character or by any increase or diminution in its amount might serve to inhibit or to increase the growth of the three pathogenic forms used in these experiments.

It had been observed by other investigators that not only the rapidity of growth but the pathogenic properties of all bacteria depend greatly upon the amount and kind of the culture medium used. That this was true of these mouth forms under consideration was easily determined so far as it applied to growths on artificial media, and the author was encouraged to believe that the same would prove true when they were studied in their natural condition in the human mouth; that is to say, that a form would be more numerous and the virulence would be greater under conditions which favored its growth in the mouth, and that it would become less active and less numerous when deprived of nutrition.

In order to find cases containing the three organisms experimented with, a great many patients both in private practice and in the dispensary had to be examined, and many hundred cultures and cover-glass preparations had to be made, and the author is greatly indebted to Dr. John Coolidge, then assistant in Bacteriology in the Harvard Medical School, for examining and classifying many of the cultures of mouth bacteria which were used in this work. Work was begun with the staphylococcus pyogenes aureus, and although it anticipates the results somewhat, it may be stated that when once found in the mouth this form was more persistent than either of the other two examined. In Case No. 1, staphylococcus pyogenes aureus was found in the mouth in great abundance. Several cavities containing pus were discovered in the gum margin around the necks of the teeth, and these pockets contained many aureus forms. Masses were also found adhering to the teeth. Cultures made at this time showed this pus-producing form to be extremely virulent.

It is well known that the subcutaneous inoculation of this bacterium in lower animals does not always produce a suppurative process, and large quantities of a bouillon culture may be introduced into the abdominal cavity without producing inflammation, unless something which acts as a direct irritant be introduced at the same time. When, however, the organism is injected directly into the circulation the results leave no doubt as to its action. For this reason rabbits were used in the present experiment. In one animal 0.2 cubic centimetre of a bouillon culture was introduced into the venous circulation of the rabbit's ear, and in another rabbit inoculated at the same time the same amount of a watery suspension of the organism was used. In the first animal death

followed in a little less than three days, and the second animal died about twelve hours later.

The appearance displayed at the autopsy of these animals was in every way typical. The pericardial sac was distended by a gelatinous substance, and yellow minute abscesses were seen in the myocardium. The diaphragm and kidneys were studded with these yellow spots. The muscles also showed great numbers of these spots. The liver and brain apparently were not affected. Cultures and cover slip preparations from these minute abscesses left no doubt as to the cause of death. *Staphylococcus pyogenes aureus* was found in pure cultures. Treatment was now directed to the patient in whose mouth this organism had been found, and for three weeks the most rigid cleanliness was enforced. The pus pockets were syringed out daily with pyrozone, and twice applications of nitrate of silver were made. Under this treatment a marked improvement was made, although an absolute cure was by no means accomplished. The patient was enjoined to cleanse the teeth after every meal and to remove the food particles as quickly and as thoroughly as possible. This precaution was insisted upon because it seemed reasonable to believe that food particles remaining in the mouth would furnish an excellent medium for the development of bacteria.

At the end of three weeks cultures were taken from as nearly as possible the same spot in the mouth as that from which the previous culture had been taken. This was upon the buccal surface of the upper left second molar about an eighth of an inch from the opening of one of the pus-pockets referred to. It is interesting to note that at this time almost all forms of bacteria in this mouth as shown by numerous cover slips were far less numerous than when examinations were made three weeks before. The diminution was particularly marked in the thread-like forms and in the spirilla, but just what significance may be attached to this observation the writer is at present unable to say. The cultures of the aureus made at this time were treated exactly as those taken three weeks before, and showed but slight variations in their development upon artificial media except in one particular. The chromogenic action of the first cultures was much more marked, and the characteristic color appeared slightly earlier than in the later cultures. It is, however, not to be inferred that chromogenic action is any indication of virulence.

Two rabbits of approximately the same weight as those used in the earlier experiments were selected and inoculated as before, care being taken that in every particular the operations should be a repetition of those performed three weeks earlier, the only difference being that in these latter experiments the cultures were taken, as has been said, after the mouth had been scrupulously cleaned and treated for three weeks.

The animal inoculated with a watery suspension of the organism died at the end of seven days, while the animal inoculated with a bouillon culture survived. In the case of the surviving animal the only symptoms noticed, except a slight dulness, was an increase in the amount of urine passed. The autopsy upon the dead animal showed, in addition to the yellow abscesses referred to in the previous case, a somewhat marked peritonitis.

This experiment was repeated with bacteria taken from two other mouths, with but slight variation in the result. In Case No. 2 only one animal died of the two inoculated with cultures from the uncared-for mouth, while both animals inoculated after the mouth had been cared for for a month survived and apparently experienced no great discomfort.

In Case No. 3 both animals died on the fourth day when inoculated with cultures from the unclean mouth, and cultures taken after three weeks' care killed one animal in five days, and the other died on the ninth. This case is of greater significance than would appear from a simple statement of results, because, owing to the illness of her child and the poverty of her surroundings, it was almost impossible for this patient to greatly improve the condition of her mouth, and there was little difference in its condition between the first and second inoculations.

Other experiments were made by finding the organism (as is sometimes possible) in a clean, well-cared-for mouth and comparing its virulence with that of the same organism taken from a filthy, uncared-for mouth in which pus-pockets and abscesses abound. These experiments, which will cover a large number of cases, are not yet completed, but sufficient evidence has been accumulated to make clear the fact that the *staphylococcus pyogenes aureus* is more virulent when taken from filthy mouths than when taken from mouths that receive constant care.

Experiments with the *micrococcus tetragenus* were much simplified by the fact that guinea-pigs and white mice are quite sus-

ceptible and could therefore be used for inoculation. It is interesting to note that gray mice are not susceptible to this bacterium. The organism, as has been said, is almost always found in tuberculous patients and is frequently seen in healthy mouths.

Throughout these experiments care was taken not to confound this organism with the micrococcus tetragenus subflavus which is sometimes found in nasal mucus and which may find its way into the mouth. While the micrococcus tetragenus grows but slowly on nutrient gelatin, the micrococcus subflavus does not grow at all on that medium. Other marked differences make it impossible to confound the two except by gross carelessness.

It has been said that guinea-pigs and white mice were susceptible to the micrococcus tetragenus, but in the case of white mice death was often delayed until the eighth or ninth day, while in the case of guinea-pigs a local abscess was often the only result of the inoculation. At other times death occurred from general infection. When this occurred, whether in guinea-pigs or white mice, there were few characteristic signs in any of the organs examined at the autopsy. Microscopic examinations of the blood, however, revealed the presence of the organism, and the inoculation of other susceptible animals with a drop of blood or a bit of tissue from the dead animal would reproduce the disease in the animal inoculated.

It was discovered that while the organism under consideration was easily found in the mouths of tuberculous patients, it was by no means as common in well-cared-for mouths as we had been led to suppose. One of the chief difficulties in experimenting with this form was that while it was to be found in fully ten per cent. of healthy mouths that did not receive special care,—such mouths, for instance, as are met with in dispensary practice,—yet in private practice, among people of cleanly habits, who carefully brushed the teeth, the organism was by no means common. The writer failed to find it in more than two per cent. of the latter cases. Another difficulty encountered was the fact that when discovered in the mouth of one of these dispensary patients, if the patient could be induced to go to the dental dispensary and have the mouth thoroughly cleaned and put in order, and if he could then be persuaded to wash and cleanse his mouth several times a day for a fortnight, the organism would disappear except (as was to be supposed) in the mouth of the tuberculous patient, where its number greatly diminished under careful cleansing of the mouth. The aureus was

much more persistent and resisted careful cleansing of the mouth for many weeks; indeed, in some cases it seemed nearly impossible to get rid of it, so tenaciously did it adhere to the teeth and gums.

The following cases will serve to illustrate the variations in virulence of the micrococcus tetragenus under different conditions.

Case No. 1 was a tuberculous patient with teeth in good order and a mouth clean and well cared for. Cultures taken from this mouth and introduced into white mice caused death in from three to five days. Of two guinea-pigs inoculated with the same culture, one died in five days, while the other survived, but showed local abscess. The organism was recovered in these as in the following cases.

Case No. 2 was also a tuberculous patient, but, unlike the first case, the mouth was shockingly neglected and contained several badly diseased teeth, while several were missing. Cultures were made as in the previous case, and two white mice and two guinea-pigs were used for inoculation purposes. As a result one white mouse died in two days and one in four days, while one guinea-pig died in five days and the other survived until the ninth day, when he died from a mixed infection. The micrococcus seemed slightly more virulent in this case than in Case No. 1, but the difference was hardly great enough to be significant.

This mouth was thoroughly cleaned, the abscessed teeth extracted, and the patient instructed to cleanse the mouth thoroughly several times a day. This she did faithfully for two weeks, and cultures were again taken and inoculations made as before. There was no perceptible diminution in the virulence of the cultures, the animals dying in about the same time as when the culture was taken from an unclean mouth. Cover-glass preparations showed a great reduction in number of nearly all forms of bacteria after the mouth had been carefully cleaned for a period of two weeks. It was regretted that this case could not be watched for a longer period, but the patient was ordered to seek another climate, and the case was lost sight of.

Case No. 3 was a patient in good health, with a clean, well-cared-for mouth. There were few coccus forms present, although a number of rod forms, both straight and curved, could be seen in cover-glass preparations. The culture was obtained early in the morning before the mouth was cleansed. Many previous attempts to obtain cultures of the micrococcus tetragenus from this mouth

had failed. Following inoculation, one white mouse died in six days and one in seven. Both guinea-pigs survived. One had an abscess at point of inoculation, but the organism could not be recovered from this animal. Inoculations were made from the same culture five days after the first inoculations were made. In this second series only one white mouse succumbed and that at the end of the seventh day. The virulence of the organism grows less the longer it is grown on artificial media. It increases by being passed through susceptible animals.

Case No. 4 was from the mouth of a patient who was suffering from several abscessed teeth, and whose mouth was in a totally uncared-for condition; otherwise, the patient was in excellent health. Many coccus forms were present in the mouth. The tetragenous form was isolated and the usual inoculations were made, with the result that one white mouse died in four days and one in five days. Both guinea-pigs died on the seventh day.

Case No. 5, the patient who figured in Case No. 4, was induced to carefully cleanse his mouth, paying especial attention to his tongue and teeth. His teeth were properly treated and put in fair order. Eighteen days after this treatment had begun, and the same number of days after the first culture was taken for inoculation (Case No. 4), the attempt was made to find the organism. Eleven cultures were made from different parts of the mouth, and the bacterium was found in two only. One of these was taken from the crypt of the tonsils and the other was taken from the gum surrounding one of the dead teeth that was still undergoing treatment. Inoculation with the culture taken from the tonsils caused the death of one white mouse on the seventh day. The second mouse escaped from the cage on the fourth day and could not be recovered. One guinea-pig died on the fifth day from a mixed infection, while the other survived. Inoculation of mice and guinea-pigs from the culture taken from the neighborhood of the diseased tooth was not fatal in any case.

Many other cases were studied, and these would perhaps be of interest to the student of bacteriology, but enough has been said to point to the following conclusions: That the micrococcus tetragenus is more active when taken from the mouth of a tuberculous patient than from the mouth of a healthy person. That cleansing the mouth in tuberculous patients greatly lessens the number, while it does not always lessen the virulence of this bacterium. It is pos-

sible that a longer period of cleanliness might give a more favorable result.

In mouths of healthy individuals this organism occurs with greater frequency and in greater numbers, and is much more virulent when the mouth is uncared for than when it is habitually well cared for.

The organism will usually disappear from a mouth in a few weeks if the mouth is properly cleansed several times a day during that period. This does not apply to tuberculous cases, although, as has been said, a reduction in the number is usually effected by cleansing.

The micrococcus lanceolatus is variously described under many names, as, *Diplococcus pneumoniae* (Weichselbaum); *Streptococcus lanceolatus pasteurii* (Gameleia); *Bacillus salivarius septicus* (Biondi); *Micrococcus pneumoniae crouposæ* (Fränkel); etc. It is found in the saliva in many diseased conditions as its variety of names would indicate, but it also occurs in the saliva of healthy individuals, and this saliva is often fatal to small animals.

Sternberg called attention to this bacterium, which he discovered in the blood of rabbits which had been previously inoculated with saliva from his own mouth. At about the same time (1880), Pasteur found it in the saliva of a child suffering with hydrophobia.

A number of other writers have made numerous experiments with this organism, and their results may be summed up by saying that it is not constant in the mouth, but appears and disappears as if by accident, and that saliva containing this microbe varies in virulence under different conditions.

It was necessary to make but a few experiments to demonstrate a fact which had been already pointed out by Sternberg and others, that micrococcus lanceolatus loses its pathogenic property to a marked degree when it is grown on artificial media. It is also more easily destroyed by antiseptics than most bacteria, and its growth is retarded and its virulence lessened by antiseptics which are not powerful enough to completely destroy the organism.

Its pathogenic properties are quickly revived by passing it through susceptible animals. Emmerich, in 1891, demonstrated the immunizing action of this bacterium, and in the writer's experiments it was found that an animal once inoculated with this organism without fatal result was thereafter immune to very large doses. How long the immunity lasts has not been ascertained.

It was to be expected, then, that mouth cleanliness would cause a disappearance of this microbe in many cases, and this the writer found to be true. It is probably the easiest of all pathogenic mouth forms to get rid of. Absolute cleanliness of the mouth, including tongue and teeth, with the frequent use of an antiseptic mouth-wash would, in a majority of instances, cause the entire disappearance of this bacterium in from three to fourteen days.

The same treatment, when it did not actually destroy the microbe, would render the saliva which contained it *non-pathogenic*, provided that the saliva itself was normal. A further physiological and chemical study of saliva secreted under various conditions of health will probably throw light on the question of its action in encouraging or retarding the growth of bacteria. In the present experiments the writer was unable to enter into the study of that phase of the question, but it was observed in a general way that saliva which was clear and watery offered less encouragement to the development of bacteria than that which was thick and viscid and which apparently contained large quantities of mucus and broken-down epithelial cells.

If it be true, as can now be scarcely doubted, that this microbe is the excitant of croupous pneumonia, it is undoubtedly true also that the infection is derived from the mouth in a vast majority of cases. We have, then, a most important factor in preventive medicine in mouth cleanliness, and it can be asserted with a degree of positiveness that is fully borne out by experiments and by clinical experience that this disease might be almost eliminated from human ills were it possible to keep the mouth in a clean, healthy condition.

This, we know, is impossible. People can not be persuaded, except possibly when the disease is exceedingly prevalent and the danger from exposure is imminent, to spend the time necessary to guard against the likelihood of mouth infection, but there is another aspect of the question which will certainly appeal to the physician anxious to prevent disease.

It is well known that croupous pneumonia frequently follows other diseases. It is one of the dreaded sequelæ of measles, whooping-cough, and typhoid fever, and appears to develop sometimes from a severe cold. This, we know, is not strictly true, for it is not possible for one disease to turn into another, since the characteristic pathogenic properties of a given bacterium do not depart greatly from well-defined lines. It is, however, true that a system dis-

ordered by what we term a cold, or having its resisting power lowered by one disease, is peculiarly susceptible to the attacks of another; and, as in the case of croupous pneumonia, if the microbe of the disease is lurking in the mouth it finds the system peculiarly susceptible to its attacks after one of the aforementioned diseases has lowered the vitality of the patient.

Many physicians now recognize in a degree the importance of cleansing the mouth, and the educated nurse, if she be a careful woman, will brush regularly her patient's teeth, because she has found that this simple act greatly adds to his comfort. Yet it is true that comparatively few physicians or nurses have learned to look upon cleanliness of the mouth as an important factor in preventing complicating diseases.

If, however, the experiments presented have not been wrongly interpreted, the pneumonia germ is one of the easiest to destroy, and mouth cleanliness will go far to reduce the disease to a minimum.

If diphtheria and other pathogenic forms which find their way into the mouth are influenced by the conditions which have been shown to affect the virulence of the bacteria experimented upon, then thorough mouth cleanliness will be found to be our greatest safeguard against disease.

JUMPING THE BITE.¹

BY GEORGE B. TERRELL, D.D.S., NEW YORK.

THERE has been much discussion relative to jumping the bite, as to whether the shape of the lower jaw is changed, or the condyles move forward or backward and make for themselves a new point from which to swing.

I present to you the problem again in the case of a girl fourteen years of age, where the lower jaw protruded so that the teeth bit entirely outside of the upper teeth, as you can see by an inspection of the casts (Fig. 1); and where by the use of appliances the arch of the upper jaw was expanded laterally, and then, apparently, the whole lower jaw was forced backward until the teeth bit within the upper arch (Fig. 2).

¹ Read before The New York Institute of Stomatology, April 7, 1903.

FIG. 1.

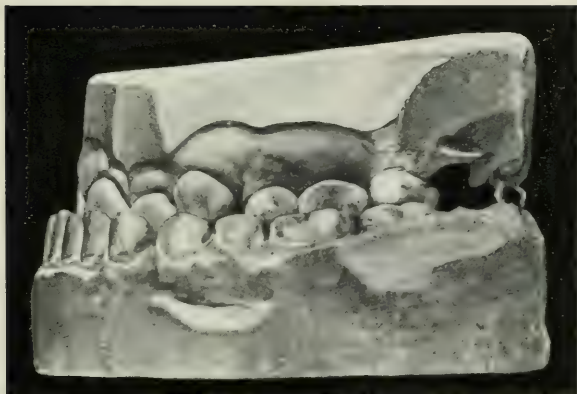


FIG. 2.

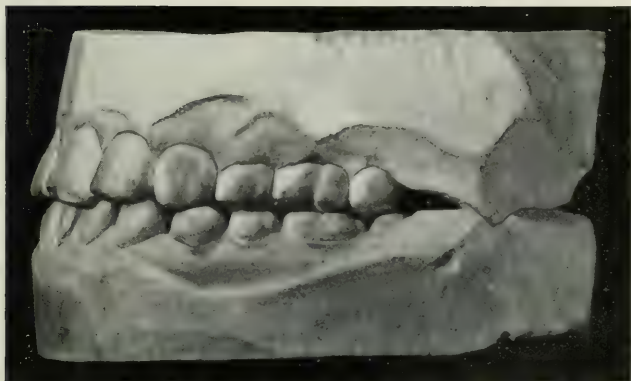


FIG. 3.

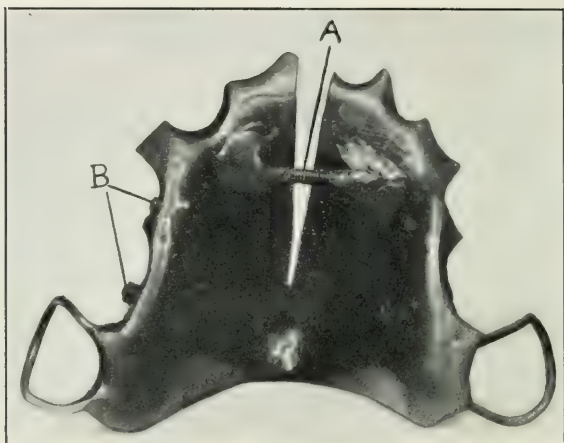
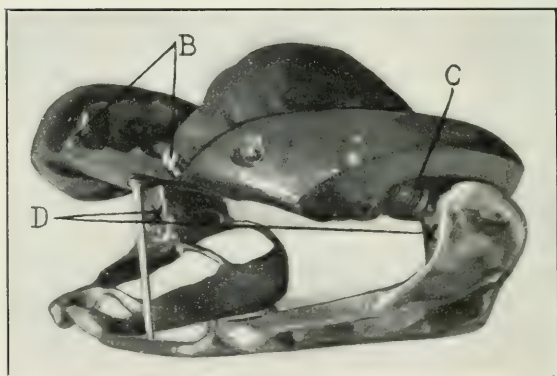


FIG. 4.



Unfortunately, no photograph of the patient was taken at the beginning, but this photograph, which was taken a few days ago, will show you the completed case, and by comparing the models you can picture to yourselves the profile as it was.

You will also observe by the cast that a bicuspid on each side of the upper jaw is missing.

The first step was to expand the upper arch and push out individual teeth on the sides. This was accomplished with a rubber plate (Fig. 3) split through the middle to within about one-quarter of an inch of the back edge, where it was strengthened with a piece of wire embedded in the rubber. Towards the front, embedded in the rubber and spanning the split, was a screw (A) for spreading the plate. Where teeth were to be pushed out the plate was made thicker, a hole bored opposite the tooth, tapped, and a small screw (B) of German silver turned in. The patient was given a small screw-driver and wrench and directed to turn the screws out against the teeth, and the screw spanning the split a little every day. On account of the interlocking of the upper incisors, it was left to the next plate to push these out.

The next step was to move the upper jaw forward or the lower jaw backward, or both, so as to get the true bite. To do this a crib of German silver wire was fitted around the bicuspid and second molar on each side of the upper jaw, and attached to the crib on the outside opposite the first molar, pointing backward and a little downward, were two tubes, one on each side, about three-eighths of an inch long, which were tapped and screws (C) with good-sized heads fitted to them. Over the crib a plate (Fig. 4) was vulcanized to fit the roof of the mouth, with sufficient thickness of rubber over the ends of the molars and bicuspids to open the bite and allow the upper front teeth to pass over the ends of the lower teeth, and with a little hood of vulcanite over the heads of the screws to prevent them from irritating the insides of the cheeks.

For the lower jaw a crib was made of German silver wire and fitted to the first bicuspid and first molar of each side, and soldered to a heavy wire running around the inside of the arch; and a narrow strip of plate was soldered on top of the molar crib to prevent its jamming down between the teeth. Then, on the outside of the crib an inclined plane (D) was soldered on each side as close to the molars as possible, and so facing that when the jaws were closed the heads of the screws in the upper plate came in contact with

the surface of the inclined plane. Various positions were tried, but these were found to be the best.

The patient was directed to turn the screws out about a half-turn every day, and report in a couple of weeks. This was done until it was found that the teeth or the jaws had started to move.

As the patient lived at a considerable distance, it was impossible for her to come to the office as often as she should have done, and it made corrections in the construction of the appliances necessarily slow.

It was discovered after awhile that the constant rubbing of the screw-heads against the plane turned them in again. This was obviated by melting into the tubes a little resin, which, when cold, held the screws fast. Every time the screws were turned a heated iron was held against the heads to soften the resin.

Then, again, it was found that the edge of the vulcanite hood over the screw-heads was too hard, and pinched the cheeks against the apparatus in the lower jaw, so velum rubber was substituted for the hard rubber.

The appliance was worn continually except when eating, and could be taken out and cleansed, and no injury has been done to the teeth. The teeth and appliance have been under perfect control at all times.

The patient is at present wearing small retaining plates to hold the teeth out, the overbite of the upper front teeth keeping the jaws in place. There is not yet a perfect occlusion, but, rather than grind off points on the molars that come in contact, it is thought best to let the teeth grind to their own occlusion.

TOLERANCE OF THE TISSUES TO FOREIGN BODIES, WITH SPECIAL REFERENCE TO THE PULP AND GUMS.¹

BY M. H. FLETCHER, M.D., D.D.S., CINCINNATI, OHIO.

THE reason that one foreign substance within the tissues is less or more irritating than another is to be determined not alone by the character of the substance, but also by how it influences the cells of the tissues involved.

¹ Abstract of a paper read before the American Medical Association, Section on Stomatology, New Orleans, May 5 to 8, 1903.

That environment influences cell life is well known. Aside from their food, they may be influenced by temperature, electrically, by chemicals, and mechanically. Our present purpose is to consider mechanical irritants.

In treatises on "gunshot wounds" it is presumed that the bullet is of lead, and the practice almost universally advised is to leave the ball undisturbed if it is not easily found. There is an adage generally adhered to, to the effect that "when a bullet has ceased to move it has ceased to do harm."

The accompanying specimens of elephant's tusks, one with a lead bullet encapsulated, the other with an iron bullet rolling about in what seems to have been a pus cavity, shows the different effects these two metals may have on living tissue (assuming the condition to have been the same).

These bullets, which have been shot at the animal's head, have penetrated the pulp-chamber of the tusk, the animal living long enough afterwards for the bullet to become encapsulated in ivory, or produce a pathological cavity.

The protrusion of a broken steel broach from the apex of the root of a pulpless tooth seems invariably to cause an abscess, whereas the protrusion of a gutta-percha point apparently causes no trouble.

A number of years ago Gunn suggested the use of beeswax for packing wounds in place of other dressings, and it is found to be a good procedure, the wax being unirritating to granular surfaces.

Four years ago Gersuny, of Vienna, demonstrated the practicability of injecting even large quantities of paraffin and vaseline into the tissues, for therapeutic as well as for prosthetic purposes.

The writer has been using softened gutta-percha as a therapeutic measure in bone cavities for a number of years. My attention was first drawn to this feature seventeen years ago by having inadvertently injected too much chloropercha (gutta-percha dissolved in chloroform) through a pulpless tooth into a blind abscess. A tumor of this material the size of a pea could be felt at the apex of the tooth, and, since it caused no inflammation and produced no trouble, it was allowed to remain undisturbed, and it is there to-day, never having caused the least disturbance. I believe it is the practice of many dental surgeons to inject this dissolved material through pulpless teeth until it appears at the fistulous opening, expecting the tissues to heal quicker by this treatment than by any other.

Caseous pus may become encapsulated and remain apparently harmless until finally absorbed.

Trichina in small numbers no doubt could remain indefinitely in the tissues without their presence being known, for they are most beautifully taken care of.

Steel needles may wander through the flesh without pain and without apparent damage. Dr. P. S. Conner is authority for the statement that a knife-blade may be tolerated in the same manner, and that iron balls, fragments of shells, splinters, and, in fact, almost any foreign material, if not accompanied by septic matter, may become encapsulated, but agrees that softer, more yielding substances, which are impervious to moisture, are less irritating.

We will assume, then, that as foreign bodies certain substances are, *per se*, noxious or innoxious in degrees proportionate to their physical properties. Those that are most innoxious are impervious to moisture and more or less yielding in character. Hard, smooth substances like a needle or knife-blade may be tolerated, but if they become oxidized or roughened by chemical action they then seem to produce trouble. Hard, rough substances of any kind seem more irritating than a soft pliable material, providing the latter be impervious to moisture. Pieces of cloth or bits of wood seem especially noxious, for reasons which may be explained.

Foreign bodies may be classified as extrinsic or intrinsic, according to whether they are forced into the body from without, or whether they were part of the body, or produced within.

The present object is to consider the manner in which the animal economy deals with sequestra, calcareous deposits about the teeth, and an irritated pulp.

THE PULP.

In teeth of persistent growth the pulp practically remains one size and is more or less cone-shaped, with its apex directed to the grinding surface and into the long axis of the tooth; the base of the pulp is at the source of supply as shown in the elephant's tusk. When an injury occurs to such a pulp it has every chance of recovery that other tissues have, because of collateral circulation. If the irritant be a foreign body (as shown in the elephant's tusk), it is finally pushed beyond the zone of the pulp, and the formation of dentine proceeds regularly as before. This is true of all tusks and the incisors of all rodents.

In mature teeth of limited growth, as found in man, these conditions are reversed, the apex of the pulp is directed to the apex of the root, and the blood- and nerve-supply is limited to the minimum amount necessary to the life of the pulp, so that in case of injury there is no collateral circulation or nerve-supply for purposes of rapid repair, such as may be found in other tissues; hence the great number of pulpless teeth in human beings, where lesions of the pulp far outnumber those of any other animal.

In filling teeth a pulp may be successfully capped with any suitable innoxious substance, providing the capping does not press the pulp. The walls in which this organ is confined being unyielding, any pressure beyond normal produces inflammation, which cannot be taken care of as it could in other tissues; this is from lack of ability to expand, as is necessary in inflammation and the consequent interference with the circulation, hence the death of the pulp in a comparatively short time. An exposure of the human pulp or other injury to it is most prone to its ultimate death, no matter how successfully the capping may have been done, and it would seem that this proneness to die is due to the very limited supply of vessels. Aside from the difference in mechanical surroundings, there seems no reason why this organ should not recover from injury as easily as any other composed of like tissues, for the process of repair here is no different from that of repair in other tissues of mesoblastic origin. The fact seems to be that the process of repair is practically identical in all tissues, the great essential being abundant blood-supply.

Decay, fillings, cappings, or abrasions may be looked upon as foreign bodies, for they stimulate the pulp to action, resulting in an effort on the part of this organ to protect itself or repair damage done.

The peripheral ends of the fibril may be considered as a part of the pulp, and wearing away or destruction of any part of these delicate processes is a lesion of tissue as truly as an amputation or other larger injuries. Irritation to the pulp, however, which is short of acute inflammation and death usually results in the production of more dentine; this may take the form of nodules, or a protective growth at the pulp ends of the fibril irritated. These growths are shown in the accompanying tooth sections. This effort at protection, however, often results in death from lack of space in which to work, accompanied with the lack of collateral supplies. Compare

these results with that of injury to the tusk. Repair in the latter case is not hindered by unyielding confinement as it is in the former, and restoration is complete. Pulp-nodules, in many instances, act as foreign bodies and end with a destructive result to the soft tissue involved. Adherent new growths in the pulp-chamber also have similar endings in many cases, the attempt at repair itself defeating its own object.

Charles B. Nancrede says, "Repair is effected by the same processes in the hard and soft, the vascular and the avascular tissues, the differences being temporary, non-essential, and chiefly dependent upon physical conditions. Thus, the lime-salts render the bone so dense that until they are removed only a limited accumulation of leucocytes and, later, proliferated tissue-cells can take place at the site of injury; yet, from the outset, the soft parts of the bone undergo the same changes, in kind, as does the least compact connective tissue.

"Two forms of repair are usually described, but in reality there is but one, the second variety being, at the outset, only a modification of the first, caused by disturbing influences; when these cease to be operative the processes of repair tend to proceed as at their inception, any variations from the typical methods being accidental, not essential parts of the process. In the normal method reparative processes commence from the moment the physical disturbance of the part ceases and the bleeding is checked. Here the minimum of reparative material is requisite, and the wound is said to heal by the first intention, by simple adhesion, or by aseptic inflammation (obsolete expression), because it is only possible in the absence of infection. Where infection occurs the reparative processes are interfered with and thwarted, reverting eventually to those seen in the absence of suppuration, but vast quantities of reparative materials are wasted, unnecessary tissue-destruction results, and the subsequent changes in the excessively developed germinal tissue often cause serious interference with function. Healing is here said to have taken place by granulation or by second intention, but the end processes are the same in both forms." (Roswell Park, "Treatise on Surgery," p. 350.)

When irritation goes beyond that of the mere stimulation of function, this description of repair seems to cover every field, at least up to our present knowledge, and especially that of pyorrhœa alveolaris.

GUMS AND ALVEOLAR PROCESS.

In the discussion of interstitial gingivitis, so-called pyorrhœa alveolaris, the process of repair, as above described, is the important factor, as it is in all lesions, the exciting cause having been determined.

The local destructive metabolism in this disease is identical with that of any like tissues. Where constant ineffectual efforts are being made to extrude or absorb noxious foreign bodies, we have like results,—namely, destruction of much of the surrounding tissues. In gingivitis the foreign body, in the incipency of the disease, is nearly always a calcareous deposit.

To Talbot more than to any one else is due our most intimate knowledge of this disease; his extended researches and observation of the disease in man and animals, and his experiments on dogs, bring the matter close under our observation. In his "Conclusions" he says ("Interstitial Gingivitis," p. 148):

"The mass of evidence previously presented demonstrates that the causes of interstitial gingivitis are divisible into predisposing causes (which may be subdivided into local predisposing and constitutional) and exciting causes. The exciting causes are either constitutional or local, but, as a rule, are local or have local action.

"The predisposing factors of this disease, as already mentioned, are conditions of jaw evolution, transitory nature of certain structures, degeneracy, and conditions of previous irritation and inflammation."

In his mercurialization of dogs for the study of the production of the disease by drugs ("Interstitial Gingivitis," p. 111), he says, "Care was taken to secure those in health and with healthy gums."

I should deem it a practical impossibility to know that there was absolutely no deposit about the teeth of these dogs, and think it fair to assume that there must have been some deposits, however small; since domesticated dogs, like men, all have calcareous precipitations about the teeth to some degree, it may not be malignant in its tendency until the etiological moment has arrived, the other factor being lessened resistance by other morbid systemic conditions.

Slight irritation from calcareous deposits may remain *in statu quo* for years, and finally a general morbid condition arrives, or rises to such a pitch that pyorrhœa alveolaris or other advanced condi-

tions of interstitial gingivitis are produced. The inflamed condition of the tissues about the teeth in interstitial gingivitis, it seems, is simply a continual effort at repair, which repair cannot be accomplished on account of the presence of calcareous deposits, or the phagedenic progress of a pus cavity about the roots, the pyorrhœa alveolaris stage. Thus it happens in these cases, as in others, that nature thwarts her own object in her attempt to accomplish it, and destroys much of the surrounding tissue.

The writer's conception of interstitial gingivitis is that it is essentially local in its exciting cause, and that it only has systemic symptoms for the same reasons that other lesions may have auto-intoxication as one result. There seems no reason to believe that drug poisoning or other morbid systemic conditions can produce interstitial gingivitis unless a lesion of the gum pre-exists; this lesion may be the merest break in the mucous membrane, caused by the smallest deposit of this irritating material, this local mechanical irritation being one requisite of the etiological moment. On the other hand, there may frequently be found in gingivitis the systemic disorders accompanying cases of sapræmia and septicæmia.

The continual pressure against the gum tissues of rough irritating calcareous deposits, which continuously increase in quantity and insinuate themselves deeper and deeper beneath the soft tissue, are accompanied with all the products of repair by granulation, or second intention, as described by Nancrede, and may be accompanied with surgical fever. These deposits may be found wherever saliva can penetrate. It has never been the writer's privilege to see deposits of tartar about the necks of the teeth that were innocuous, but they are always irritating to some degree, and usually greatly so. This condition may exist in all stages, from that of being imperceptible to the naked eye up to a complete stage of pyæmia, and may result in death.

In one case which came under my observation death resulted. The culminating cause in this instance was no doubt due to the exposure of more bone by the extraction of a molar while the gums and alveolar process were in the worst possible state. When the patient was presented to me, exfoliation was going on and much bone was exposed, and the patient had a high septic fever. The septic condition was recognized, and advice given against extraction. The patient, however, was suffering greatly with a lower first molar, and went elsewhere to have the tooth removed. I was called again

later, but the patient was past recovery, and died within ten days after the extraction.

There is abundant evidence to show that autointoxication, or a low state of health from any cause, greatly favors the progress of the disease, and with this condition present a chronic pus-forming condition may soon be found about one or more of the teeth where the local exciting cause exists, but that autointoxication or other systemic disorders cause this disease, without local irritation, does not appeal to the writer's reason any more than to say that the same disorder causes inflammation of the pleura or conjunctiva without a local point of least resistance from local cause.

Degeneracy or faulty development may bring the etiological moment at a very early stage of the local irritation. This might be almost coincident with the initial lesion, whereas, in normal and healthy individuals, the pyorrhœal stage, even in its mildest form, may be deferred indefinitely, or never appear even where calcareous deposits are excessive.

The fact that the tissues involved are transitory in nature does not seem an adequate factor in accounting for the disease, as suggested by Talbot, since they are as transitory in cases where the disease does not exist as where it does, and these tissues recover as readily as other structures which are not transitory.

There seems no question but that calcareous deposits about the teeth should be looked upon as noxious foreign bodies, and that the constant effort on the part of the tissue to extrude them results in the progressive death of the surrounding tissue. We find in this disease zones of granulation tissue, with the result of destructive metabolism in the soft tissues and the creation of sequestra in the bone. This condition, however, is changed to constructive metabolism the moment the tartar, sequestra, or other local irritants are completely removed.

SEQUESTRA.

The removal of sequestra by nature is described by Roswell Park as follows:

"A sequestrum may include an entire bone, shaft, or epiphysis, or only a small fragment. A given portion of the bone, having lost its vitality, becomes properly a foreign body which the surrounding tissues endeavor to extrude or to wall off and surround. The extrusive effort is the one which is usually seen. This is done by the continued presence of granulation tissue, which gradually per-

forates the surrounding bone at places of least resistance, the result being the slow formation of a sinus or several sinuses, ultimately connecting with the surface."

This description, from my point of view, is a very good definition of the pyorrhœal stage of interstitial gingivitis.

So long as the tartar is present as a foreign body the irritation is continuous and sequestra are formed, which are a second source of irritation until they are removed or absorbed.

These cases will all heal by removal of the deposits and sequestra, or by the loss of the tooth. The removal of the teeth invariably results in recovery, and a patient without teeth, either young or old, cannot have the disease, regardless of transitory structures, degeneracy, heredity, drugs, environment, or systemic disease. If lesions of the gums or maxillary bones appear where there are no teeth, it is not interstitial gingivitis, but something else.

MEDICAL AND DENTAL LIBRARIES.¹

BY ALICE M. STEEVES, D.D.S., BOSTON, MASS.

IN this age of strenuous activity and rapid advancement in the scientific and literary world the need of systematic library work has in a measure been anticipated.

As early as 1760 Benjamin Franklin saw the need of general public libraries, and since that time libraries have been founded in nearly all of our cities and towns.

The mother profession (Medicine) has been more than successful in its work in this direction, and during the past twenty years, under the generalship of Billings, Chadwick, Dewey, Spivak, and others, medical libraries have been organized in connection with medical societies, library associations have been formed, and splendid library buildings built and equipped. Medical departments have been organized in public libraries, and even State and local boards of health have their library departments.

On receiving an invitation from your genial secretary to contribute to your programme, my first thought was, What have I to

¹ Abstract of a paper read before the American Medical Association, Section on Stomatology, New Orleans, May 5 to 8, 1903.

write about? And after thinking over some of my experiences of the past year, it seemed to me that this story might be of some interest to many.

A year ago I came to Boston to take the prescribed examination of the examining board for dental registration, and feeling that I ought to do a little preparatory reading (it being about five years since my graduation), I looked around for the proper literature.

I knew of Boston's magnificent Public Library and of her splendid Medical Library. I hastened thither, feeling sure that I should find all the books that I needed, but although a nucleus had been formed and many files of periodicals were complete, yet the works of our modern writers on dental subjects were conspicuous by their absence.

However, I passed my examination, and resolved to try and add my mite of energy to the much-needed work of arousing an interest in dental literature.

In my preliminary work on this subject I have interviewed the librarian of the Boston Medical Library, Dr. J. R. Chadwick, and some of his colleagues, together with Dr. Jacob Williams and other librarians of the various dental societies to whom the library is indebted for the dental literature it now possesses, and all are enthusiastic over the prospect of a well-organized dental section in the Boston Medical Library.

I also wrote to seventy-five dental colleges, asking for any information which they might be able to give. Twenty-five responded; five of this number reported a library of over fifteen hundred volumes of books and periodicals, with current dental periodicals for the reading-room. Sixteen reported libraries containing from one hundred to eight hundred books. Four of the five reported catalogued libraries, with the Dewey card system, and reading-rooms for the students.

The need of more interest in the work, lack of funds, and inadequate space was the complaint of all, except Ann Arbor and the Northwestern University Dental School.

Dr. Taft reports from Ann Arbor:

"Our library was started twenty-five years ago. It contains nearly all the text-books that have been written in the English language upon the subject of dentistry. It also contains the translations of many books in other languages, and also some that have not been translated.

"In addition we have nearly complete files of all the dental journals that have been published in the country, and also the files of the transactions of those societies which have published the minutes of their meetings. There are about fifteen hundred bound volumes and five thousand pamphlets.

"We regard our library as a very valuable adjunct to the work of teaching; the regents give us five hundred dollars a year for keeping up and extending our library (we would hardly know how to keep school without our library)."

The Northwestern University reports that its library includes about two thousand nine hundred volumes, at a cost of about nine thousand dollars; this of course includes furnishings of a reading-room. The library was started in 1898 by Dr. Theodore Menges. It is now under the management of Dr. G. V. Black, and is strictly a dental library, the purpose being to include dental literature, with books on such allied sciences as pertain to the dental art. "We find it indispensable to our students and one of the most valuable additions to our general equipment."

Only two reported that the Medical Library was supplied with dental literature and that the medical and dental students used the same reading-room.

The advantages to the dental specialist of a general medical library are many; in this age of specialties, where the line of duty has been so closely drawn, it is many times necessary for us to confer with the rhinologist, ophthalmologist, neurologist, gastrologist, or perhaps with the general practitioner, in regard to our patients.

The neurasthenic may be unable to endure the fatigue and fear of the slightest dental operation, but the teeth ought to be saved.

What shall we do, fail in our duty to the patient and acknowledge ourselves not worthy the place we occupy in the scientific world, or shall we grind, grind? Keep abreast of the times and be able to co-operate with any department of medicine.

However, it is not always easy to convince some of our *Æsculapian* friends that they do sometimes need our co-operation, but year by year we find this feeling passing away, and we are now welcomed in their ranks if we will only meet them half-way.

To the dental student the library is equally important for reference and study, and that the student may gain the most benefit

from his work a good reading-room is necessary and access to the books during any part of the day that he may be free to study.

However, it seems that it would be well when practical to work with an already existing medical library.

I cannot do better now than to give you a revised edition of some important suggestions of Dr. George M. Gould, of Philadelphia :

1. The systematization and practical carrying out of a method to effect the exchange of duplicate books whereby such volumes not needed by one library may by exchange or purchase find their way to the library heretofore without them.

2. A committee to make effective some means of bringing to public medical libraries the books of dentists deceased or retiring from practice.

3. A list of all the dental societies in the world which publish reports or transactions, and to solicit gifts or exchange of these reports to each one of our library sections.

4. To endeavor to bring the attention of wealthy individuals and of older physicians and dentists to the present sad state of dental libraries, and the tremendous possibilities of good that would come from endowing, founding, and organizing for the purpose of bringing medical (I mean dental, too) literature within the practical use of the profession.

At present rich men, and women, too, seem to be devoting their millions to purposes other than scientific medicine. During the past year a step has been taken in the right direction, and Harvard Medical College has received a munificent gift; but, sad to relate, adequate provision has not yet been made for the dental department. However, Harvard will be true to the first essentials of life—thorough mastication, perfect digestion, perfect assimilation, hence perfect scholars.

Let us show them what good they could do by bringing to every individual dental specialist trying to save the health and comfort of his patients the experiences of the world's workers.

EMPHYEMA OF THE ANTRUM.¹

BY O. N. HEISE, M.D., D.D.S., CINCINNATI, OHIO.

IN an article on Empyema of the Antrum appearing in one of our leading dental journals not long ago I noticed a statement as follows: "Within the last few years a comparatively new affection, frequently confounded with antral empyema, has appeared; dentigerous cysts arise, as you know, about the tooth-roots, and slowly dilate the tissue at the root of the tooth." I quote this principally to show that affections of the teeth and alveolar process in relation to antral troubles do not receive the attention they should and deserve. If the author of the above referred to article had taken the trouble to inform himself, he would have found that it was not a new affection; also that a dentigerous cyst is a different condition of affairs than he states it to be.

These maxillary cysts, when found in the neighborhood of the molars and bicusps, can and do in their development raise or push the floor of the antrum to such an extent that finally the thin intervening lamella of bone is resorbed, leaving only the periosteum and the lining mucous membrane of the antrum as a covering. Oftentimes I have seen the encroachment such as to include the entire antrum, filling it completely, in its further development raising both outer and inner wall as well as the roof.

Antral cysts developing from within the cavity must of necessity first completely fill it before they can produce any abnormality in the way of bulging of either wall, and can, I think, be recognized as having their origin from within, instead of having developed with the alveolar process. The facial wall being extremely thin, owing to the resorption of the bone, leaves at times a decided defect in the wall, whereas in the dental or alveolar origin the thinness of the wall is found to be in the alveolar region or process. They are more frequent than has been supposed, not only in connection with antral lesions, but in other regions of the alveolar process, both in the upper and lower maxilla. Many an abscess has been treated with little or no success, the tooth finally extracted, the socket curetted, packed, etc., thinking it to be a case

¹ Abstract of a paper read before the American Medical Association, Section on Stomatology, New Orleans, May 5 to 8, 1903.

of caries; whereas, if the proper diagnosis had been made, the tooth could easily have been saved by proper treatment, especially the single-rooted teeth.

The domain of the stomatologist runs very closely into that of the rhinologist. Every now and then in the treatment of an obstinate antral suppuration we find that the trouble is not so much in the antrum as in some of the accessory cavities draining into the antrum, making a reservoir, so to speak, of it, and were treating only the effect, not the true cause in such instances. This fact, and also the frequent occurrence of empyema after la grippe, has led some men to almost doubt the dental origin of antral empyema. There is no question at all in my mind that many antral cases are primarily due to infection from some accessory cavity, or other nasal disease; nevertheless dental causes are and will remain prominent etiological factors.

The difference of opinion as to the main causation of antral empyema depends greatly upon the view-point taken, reminding one of the Oriental story of the three blind men who went one day to inspect an elephant. "He is like a spear," said one, who grasped the tusk. "He is like a fan," said another, who felt his ear; while the third, with his hand on his leg, declared he was "like a tree." They had all inspected the elephant, but naturally formed different ideas of his appearance. So it is with the etiology of antral empyema, various observers form various views from various experiences, while if all would inspect each and every case, and judge of its cause and treatment on its own individuality, it would be seen that there is ample room for all opinions in considering this interesting subject.

It is not my intention to enter into a discussion as to which etiological factor, nasal or dental, is most frequently found to be the cause of antral suppuration, but it has seemed to me that of late the dental relationship to antral empyema has been somewhat overlooked, not only being frequently the cause, but having a decided influence in keeping a certain amount of irritation, thereby preventing a complete cure. I want therefore to bring this phase of the subject to your notice.

That many affections of the nasal cavity and antrum are due to diseased teeth, etc., is not to be doubted. Not only abscessed teeth, but oftentimes carious, and even filled teeth, especially the superior incisors, are the cause of nasal disturbances. Ziem, of

Danzig, was one of the first to point out the important relationship existing between diseased teeth and abnormalities of the nasal mucous membrane and antral troubles. He reports a number of cases showing that any carious tooth in the superior maxilla, and sometimes even in the inferior maxilla, can and does, by reflex action, bring about hypertrophica rhinitis, and sounds a note of warning against the imperfect treatment of carious and diseased teeth, especially the molars and bicusps. It was due to his investigations that in the year of 1886 the real impetus to the study of antral empyema was given, showing conclusively that they were far more common than heretofore supposed or believed, Ziem himself being a sufferer from an antral empyema due to a diseased tooth. He also was the first to call or designate them as empyema of the antrum, which, however is not altogether a correct term, inasmuch as an empyema from a pathological stand-point is a collection of pus in an enclosed cavity of the body. In the so-called empyema of the antrum we have the collection of pus, but not in a completely enclosed cavity, as we have a continual or an occasional discharge of pus from it. It is useless, however, to find fault with the term until we have a better and more appropriate one to apply to it. Since Ziem's first important contribution to this subject and the other accessory sinuses of the nose, Zuckerkandl's numerous dissections, as well as P. Heymann, Moritz, Wolf, Harke, and others, it has been shown that diseases of the accessory sinuses are anything but infrequent; in fact, they are the rule almost, in acute infectious diseases, but fortunately will, if the natural openings are normal and not closed by some diseased condition of the nose, end in a spontaneous cure. That some do not end this way is due, according to M. Schmidt and E. Frankel, "to the varying virulence of the bacteria and the individual disposition of the patient."

It is, however, "rather strange," as pointed out by M. Schmidt, "that the various sinuses, being so frequently affected in cases of la grippe, should show the presence of the influenza bacillus so seldom,—only in one case out of thirty, according to E. Frankel's examinations."

Grunwald has well said, "The great frequency of inflammation of the antrum of Highmore, which follows from the anatomic position of the cavities, rendering them liable to infection by the extension of a process from the inferior turbinate, and favoring the

isolation of the morbid process within them by the swelling of the surrounding tissues, and by the high position of the office above the floor of the cavity, is enhanced by the proximity of organs like the teeth that are so prone to become diseased. Accordingly, infection of the antrum of Highmore, derived from a diseased pulp by way of the lymph-channels, and catarrhal condition due to irritation accompanying coronal caries, are quite common, and, inversely, catarrh of the antrum may give rise to periodontitis and thus establish a vicious circle, so that the antrum disease persists even after other causes have been removed. As infection creeps along the lymphatics of healthy bone, a focus of infection in the crown of a tooth is by no means to be despised, for even if an empyema of the antrum be due to another cause, yet disease of the crown of a tooth is calculated to maintain such a state of irritation in the mucous membrane as may frustrate all attempts at a cure."

In an excellent article on the *Heilbarkeit der Kieferhöhlenentzündungen*, published in the *Archiv für Laryngologie und Rhinologie* (1889), Heft 3, Grunwald gives interesting and convincing statistics regarding the influence of the teeth in the treatment of antral affections,—namely, "In thirty-one antra of twenty patients who had sound teeth, or apparently so at least, thirty-nine per cent. were cured, twenty-three per cent. almost cured, sixteen per cent. improved, and twenty-three per cent. unimproved, whereas in twenty-eight antra of nineteen patients, in whom the decayed teeth influencing the condition of the antrum were extracted, sixty-five per cent. were cured, seventeen per cent. almost so, fourteen per cent. improved, and only five per cent. not cured."

Grunwald explains that in cases of those patients having apparently sound teeth there must have been some diseased condition present, in the way of a periodontitis, which was and is often overlooked in cases, even by dentists, as he on a number of occasions referred the patient to them, and they refused to extract the tooth or teeth on account of the apparent soundness of them; that the chances of overlooking any connection or influence that apparently sound teeth have in keeping up the suppurative process are much greater; it is easy to overlook a diseased condition of the roots of the teeth, whereas in the cases where teeth were found to be diseased and either acted as a direct cause of the empyema or were to a certain extent responsible for the original trouble in the

antrum, or in keeping up the suppurative process, the extraction of them alone was a prime factor in the cure of the affection, but does not of itself, in the majority of cases, suffice to bring about a complete cure, inasmuch as the mere puncturing of the antrum does not show any brilliant results.

That not enough attention has been bestowed upon this matter is or has been shown by the fact that in a number of cases treated according to the accepted methods of to-day suppuration would persist until the teeth involved in keeping up the process had been extracted, showing conclusively that although they might not have been the original cause of the suppuration, nevertheless they were active factors in preventing a complete cure. He also cites a number of cases to show the important relationship existing between diseased teeth and suppuration of the antrum.

There seems, however, to be a decided difference of opinion between the anatomists and clinicians regarding empyema of dental origin, the former claiming, as no microscopic evidence of any inflammation or change of structure is found upon section of the antrum between the roots of the teeth and the cavity, that the teeth decayed or diseased play little if any active part in its production.

They do admit occasionally to have found sufficient dental cause. Zuckerkandl, in three hundred cases, could trace only one as being due to dental causes. The same with E. Frankel, while Dmochowsky never found any evidence. Hajek, in this connection, remarks, "This marked difference of opinion of anatomical and clinical evidence is due to the fact that in the course of time all evidence which would point to a disease of the alveolar process or teeth is or has been entirely lost, as it is quite possible for the germs to have penetrated through the alveoli of the teeth and the intervening bony plate, as is the case in an affection of the meninges in frontal sinus and sphenoidal empyema without leaving or producing any macroscopic changes in the bone."

Kyle states, "Too much importance cannot be attached to the teeth as a causal factor in antral lesions." A majority of cases he believes are due to diseases of the teeth, and gives the percentage as high as seventy; he also states that it may be a post-operative complication of nasal and dental surgery. One case observed by him was due to the use of arsenic applied for the destruction of a pulp in a decayed tooth. The application was made twice

in three days, and not seen for several days afterwards, when the antrum was involved, and extensive tissue necrosis had occurred with infection (evidently due to a very careless application of the arsenic). In another case extensive necrosis and suppuration had followed the injection of chloride of zinc into a tooth-cavity which connected with the antrum.

The relationship between diseased conditions of teeth with the upper jaw, gums, alveolar process, and antral troubles, as well as some lesions of the nose, is an intimate one, and should be taken into consideration more frequently than it is, and, as Kyle has well said, "A thin alveolar process of upper jaw from lesions of the teeth may cause by extension of inflammation, by continuity of structure, lesions of the floor of the nose or of the antrum; on the other hand, deflections of the septum or spurs situated close to the floor of the nose, by the inflammatory action set up in the surrounding structure may bring about inflammation and diseased conditions of the teeth in the direct line of obstruction.

The stomatologist should therefore not only have a thorough knowledge of the nasal cavities and accessory sinuses, but also of general medicine, and, indeed, the general practitioner or specialist should have a more thorough knowledge of stomatology.

PAIN.¹

BY CHARLES GILBERT CHADDOCK, M.D., ST. LOUIS.²

GENTLEMEN,—Allow me first to express a deep appreciation of the honor accorded me in the request to lecture to you.

Since my daily work is mainly in the domain of the nervous system, you will expect that anything I have to present will be decidedly colored by my usual manner of thought, and you will be in no way surprised that I have chosen *pain* as a very absorbing, if not interesting, matter for discussion.

¹A lecture delivered to the students of the Marion-Sims Dental College, March 13, 1903.

²Professor of Diseases of the Nervous System in the Marion-Sims-Beaumont College of Medicine, Medical Department of St. Louis University.

People come to you most frequently because they have pain, and very often they must endure more at your hands before they feel less; they are not all like those lucky (or shall I say unlucky) ones that are cured of the toothache an instant before they push the button of the dentist's door-bell. Pain is no joke, no matter how ludicrous some of its vagaries may be, when such vagaries have some one else for a plaything; here I propose to consider it as a serious thing, no matter how much you may be inclined to ignore it; for if the consensus of opinion is unanimous on any one point it is on the fact that dentists are the most excruciatingly painful operators that the science of medicine has evolved.

Pain must be considered, if you would understand it, from a physical and a mental stand-point. We speak of physical pain and of mental pain. Physical pain is that dependent upon some tangible physical cause; mental pain is the pain attending a state of mind (an emotional condition). But there is another kind of mental pain, that presents all the characteristics of a true physical pain, for which no physical cause can be found. The painful emotional state known as psychalgia I shall not consider here, for it belongs to the symptoms of mental alienation (insanity). The true physical pain and the mental pain resembling it are the two phenomena to which this brief discussion must be limited.

It is impossible to consider pain from merely a physical view-point; for pain is a quality of general sensation, and sensation is one of the attributes of the mind which cannot exist save as a part of mind.

In parenthesis, I would reply to any objections to this statement by saying that reflex activity excited by irritation of a sensory nerve,—as the movement of a decapitated frog's leg to brush from the flank a particle of paper moistened in acid,—though a manifestation of mind in the broadest sense, cannot be proved to be a conscious act, and therefore cannot be considered as necessarily attended by sensation.

Sensation is a subjective phenomenon,—*i.e.*, we can know nothing of what another feels except indirectly. A person tells you he is experiencing pain, and acts in a way to convince you that it is a fact of his inner subjective experience; you may be convinced by his acts alone that he is feeling pain, for your own acts under like circumstances of subjective experience have been similar. Thus, you will understand how we can know nothing of what an-

other feels except through indirect testimony. For the practical purpose of this lecture, I would limit mind to its manifestations in human beings,—manifestations which we are able to study through our own parallel and similar subjective experiences,—and thus you will accept, in this limited sense, the statement that sensation is an attribute of mind depending on consciousness for its existence. Then the real seat of pain is invariably the cerebral cortex, upon the existence of which consciousness depends—where perceptions arise.

We say, without exception, that we have a pain here or there in the body, and this is theoretically correct, and practically important, but actually we have pain only in consciousness which is referred to one point or another either for physical or mental reasons. You will understand this better by a concrete illustration: A patient has an excruciating trigeminal neuralgia; if the surgeon sever the sensory root-fibres between the Gasserian ganglion and the pons varolii, the pain ceases if the cause of it lay in the ganglion or any of its three branches; but the ganglion and its branches remain and present the same physical condition as before, and therefore the seat of the pain was not there, but higher in the central nervous system (cortex). A man has lost a limb by amputation, but continues to experience pain and other sensations in the lost part,—another conclusive demonstration that the seat of sensation is not in the limb, but in the central nervous system. These two illustrations serve to emphasize the practical difference between pain caused by an external condition (physical pain) and pain due to independent cortical activity (psychic) and *referred* to some peripheral part of the body.

It will be well to remind you by other familiar facts of the predominating rôle of consciousness in the aspect of sensation known as pain. You will recall that the general anæsthetics, chloroform, ether, etc., exercise their beneficent effect through their power to produce unconsciousness of a degree so profound that external stimuli fail to arouse the functions of the cerebral cortex. Other material agents have a similar influence; morphia, for example, has a certain selective effect, whereby it overcomes pain through its double influence on the central and peripheral nervous systems. And cocaine and allied drugs act similarly both locally and through the circulation.

The most powerful means of subduing pain is by reducing

the impressionability of the cortex of the brain, and it is to this aspect of the subject that I shall give most attention, for it is the side most frequently forgotten in our every-day dealings with pain. Before alluding to means of affecting the state of consciousness as related to pain, allow me to call your attention briefly to those portions of the nervous system that are known to be concerned in the origin of general sensibility in its various forms.

General sensibility presents several qualities, among which touch, pain, and the sense of temperature are the most important. It is highly probable that there are distinct peripheral organs, anatomically differentiated, for these three forms of general sensibility. There are organs called tactile corpuscles, and their functional relation to the sense of touch is proved; however, they may also be simultaneously concerned in the conduction of stimuli that give rise to perceptions of pain and changes of temperature. Certain it is that the sense of touch does not depend on the tactile corpuscles alone. I have never heard of such organs in the teeth; but the teeth have a very delicate impressionability to touch, and that independently of any mechanical stimulus arising from movement of the teeth in the tissues in which they lie partially embedded, as you may prove yourselves by experimentation with a feather. You all know, too, that the teeth enable us to appreciate very delicately changes of temperature; they are also quite well known as performing a part in the generation of pain. From this we may conclude that if the terminal organs of sensory nerves serve special functions within the domain of general sensibility, they do not necessarily lose any of their fundamental relations to the three qualities of general sensibility.

Though the nerve-endings may be differentiated for these three kinds of sensation, we do not find differences in the peripheral nerves to serve for their conduction. In a mixed nerve we cannot even distinguish anatomically between the motor and sensory fibres. In the spinal cord the state of our knowledge is much the same, though generally accepted views here distinguish certain distinct pathways for the conduction of certain forms of sensory impressions. It is practically certain that the distinction between sensory and motor nerves, so absolute in the composition of the anterior and posterior nerve-roots of the spinal cord, is maintained in the internal arrangement of the conducting paths in the cord. The motor elements of the spinal cord make up but a comparatively

small mass of its aggregate of matter, and they all lie in the lateral and anterior portions of the cord; the sensory or in-conducting elements of the cord are made up of the posterior columns, the greater portion of the gray matter, and a large portion of the lateral columns of the spinal cord. Theoretically we can comprehend this preponderance of nervous matter devoted to sensory functions when we consider for a moment the relative needs of these two aspects of mind. Complicated as our movements are, they are much less complex considered with respect to their motor aspect than with respect to their sensory side; for all possible movements are the results of the activity of a limited number of muscles, while the innumerable combinations and adjustments of muscular actions depend upon a corresponding development of the elements that serve sensation. Muscular co-ordination, equilibrium, the sense of position, etc., depend on an infinite variety of sensations which must have numerous avenues and centres interrelated and associated that subserve them. A glance at the functional areas of the cerebral cortex shows you that only a comparatively small area is concerned directly in motion, while the sensory areas comprise the motor and many other regions of the cortex and brain (temporal, parietal, occipital lobes, cerebellum, basal ganglia), an additional demonstration of the predominance in mass of the sensory elements over the motor elements of the nervous system.

The sensory paths in the spinal cord we need not consider here in much detail. Those for the sense of touch are said to pass upward in the posterior columns to the medulla, where they cross the median line and, continuing their course farther, reach the optic thalami, whence they proceed farther through the internal capsule, intermingled with down-conducting motor fibres, to end in the motor areas of the cortex. Whether the sense of touch depends on impressions travelling exclusively by the route just traced is still an open question; however, it seems to be quite conclusively established that the principal upward pathway for general sensibility is the *central gray matter* of the cord, with the connected great ganglia of the base (optic thalami), and the fibres that associate these with all parts of the cerebral cortex. Destruction of the central gray matter of the cord, especially the posterior portion of it, causes loss of capacity to perceive painful and heat impressions in corresponding areas of the surface of the body, while in such cases the sense of touch may remain quite unaltered. Thus

there seems to be in the cord a differentiation of sensory paths that we can find no trace of in the peripheral nerves;¹ but here this apparent differentiation is not conclusively demonstrated, and all we can safely say is that the main pathway of general sensory impressions in the central nervous system is the spinal gray with its associated basal ganglia and their connections with the cortex, mainly the central convolutions.

I have thus traced for you the route by which an impression travels to the organ of consciousness, where, if it possess a certain quality, it is recognized as painful.

It is a law applicable to peripheral sensory nerves at least, that irritation of its trunk causes sensations that are referred to the seat of the irritation and to the area of peripheral distribution of the sensory filaments of the nerve as well: when you strike your funny-bone you hurt your elbow and have a painful sensation in the little and ring-finger. This reference of sensation to the distal periphery from a proximal physical cause also happens in irritation of the sensory nerve-roots of the cord, as is seen in lesions of these roots in locomotor ataxia and meningitic processes that implicate them locally, where the distribution of pain corresponds with the areas supplied by the nerves that are gathered together to form the roots affected. In the early stages of transverse lesions of the cord we observe often enough the same phenomenon in the "pins and needles" sensation that is felt in areas below the level of the lesion. In cases of cerebral disease implicating the internal capsule or the cerebral cortex of the motor areas, often the precursory symptoms are abnormal sensations referred to the opposite side of the body,—not usually pains, but still unpleasant sensations. (Why pain is not felt under such circumstances I shall discuss presently.) We have thus every reason to believe that this law of reference of pain or sensation to the periphery is applicable to the whole length of the sensory pathway.

Irritation of a peripheral nerve or of its ganglion gives rise to pain referred to the corresponding peripheral area, and irritation of the sensory pathway in the central nervous system in the cord or at its termination in the motor area of the cortex causes

¹ The rare dissociation of sensibility in cases of peripheral neuritis does not demonstrate a differentiation of sensory nerves for the exclusive conduction of the various modes of sensibility.

sensations likewise referred to the corresponding peripheral areas, but these sensations have not the characteristic quality of pain. Therefore it would seem that the peripheral sensory cell of the ganglion of the posterior spinal root and its peripheral prolongation (the sensory nerve) have some specific form of reaction to external stimuli which, conducted centrally, is felt as pain, while the central pathway reacts to local irritation in another way felt as alterations of normal sensations,—not pain, but referred, nevertheless, to the corresponding peripheral areas. It would seem that the sensory nerve-cells of the peripheral ganglia (ganglia of the posterior roots and their morphologic equivalents of the cranial nerves) have the power to intensify (multiply) peripheral irritation and thus send the impression inward to the perceptive centres, while irritation of the same kind affecting the central elements of the sensory pathways has not this power, but gives rise to disturbances (mainly reduction) of sensibility that are rarely if ever felt as pain.

Thus the peripheral nerve and its cell in the ganglion of the posterior root and the receptive (perceptive) centre of the cortex of the brain are the two elements of the sensory nervous mechanism essential for the development of perception of a painful sensation; the intermediate links between them are essential as conductors, but not as generators, of painful impressions. Allow me to illustrate my meaning by reference to a mechanico-electrical contrivance: A telephone is made up of two instruments and a connecting circuit of wire; the two instruments are absolutely the determining elements of the nature of the sounds transmitted; an electrical current originated in the connecting circuit is transmitted, to be sure, but has no specific effect on the receiving instrument. Remember that through a telephone you have no difficulty in recognizing a well-known voice by certain qualities. You cannot conceive that such distinguishing qualities of the voice are separately transmitted over a wire; you know, rather, that the interruptions produced by a voice in the transmitter are reproduced, through the medium of the connecting circuit, by an instrument exactly like the transmitter,—the receiver,—so that the sounds that affect one instrument are not transmitted, but actually re-created in the other.

From this it must follow that there is a possible creation in the central organ of perception of that which corresponds with an external or peripheral event; and it follows, from the law of ref-

erence to the periphery (the external or objective world) of all that takes place in the internal sphere, that such creations are, if they possess sufficient intensity, always interpreted as of external origin.

A peripheral sensory nerve may conduct impressions indifferently in either direction, as is shown by the well-known experiment of engrafting the tip of a rat's tail in the skin of the back and severing it at its root, after which sensory impressions are conducted from the root of the tail towards its tip, which has developed new nervous connections at the point where it has been engrafted. Thus we may consider it probable that a reproduced sensory impression originating in a cortical centre may travel outward over its corresponding sensory pathway, and so affect the peripheral organ—ganglion and peripheral nerve—as to excite there a specific reaction like that excited by actual mechanical stimulation, and which, reconducted to the cortical centre creates the nervous condition that normally arises from actual mechanical irritation of the peripheral organ (ganglion and nerve).

You may consider this physiologico-psychologic discussion to be extremely wide of the mark, but you will grant me the privilege of presenting a theory before exposing facts that would be inexplicable without this introduction. I mean to say that the preceding considerations, though they may not offer a demonstrably true explanation of some facts of nervous physiology, still give us a working basis for a more or less satisfactory understanding of certain nervous phenomena that we meet every day.

Please allow me to proceed a step farther in psychology before presenting some practical examples of the importance of comprehending the physical and psychic aspects of pain. Let us consider consciousness and what is known as attention. Consciousness is a term used to designate our recognition of sensations, perceptions, feelings, volitions, and the higher intellectual operations that take place in us—in our minds. We speak of the field of consciousness, just as we do of the field of vision, for the number and variety of sense and mental impressions of which we are aware at any one moment of time vary extremely. Thus the mind may be exclusively occupied with a very few things, even a single thing, or alive to a great number of things. The field of consciousness is enlarged or contracted in accordance with what we call attention. Attention, as we commonly conceive it, is the voluntary limitation

of our field of consciousness to any given number of sense impressions or ideas. It is a fact of every-day experience that we have this voluntary power, within certain varying limits, to increase our consciousness of some and decrease our consciousness of other mental activities; but we have all also learned that there are certain forms of sense impressions that, in spite of all voluntary effort, rush into consciousness and insistently and against our wills absorb attention to the exclusion of that of which we may wish to think. Thus there are two aspects of attention as a quality of consciousness: it may be the immediate result of volition (our ordinary manner of regarding it), or it may be our attention is forced to concern itself with certain mental phenomena. This distinction of voluntary and forced attention is of capital importance as a basis for explanation of the vagaries of pain, and requires some further consideration. If we abandon ourselves to a spontaneous state of consciousness, it will be noted that attention wanders from one sensory domain to another, or from one train of thought to another, always guided by or absorbed by the most intense or insistent impression or idea; then, if at any moment some idea or impression excite a pleasurable painful feeling, we may experience a spontaneous awakening of voluntary attention and be induced to pursue it indefinitely to the exclusion of all other mental impressions that a moment before seemed to have an equal chance of winning attention. Thus within certain limits the play of involuntary attention is determined by the intensity of sense-impressions, passing from the less to the more intense. With a normal and moderate intensity of sense-impressions the will may always determine those that shall enter consciousness, and what ideas and trains of thought shall occupy consciousness. As generally educated and trained we have, however, a very limited control of intense sense-impressions, and are decidedly their slaves when they have for any reason become unusually intense. For example, if one be intensely absorbed in study, all ordinary and moderate sensory impressions pass unperceived: one suddenly awakes to find that he has become thoroughly chilled in a cold room, but the chilling process took place so gradually that its intense degree was necessary before it could change the direction of attention dictated by the will. Under like circumstances a loud cry of fire would immediately change the direction of attention and banish the whole voluntarily awakened train of thought. Per-

happens the most common and effectual disturber of voluntary attention is pain. Some persons can go about their daily occupations when in pain, but we can conceive a pain so intense that attention can be given to nothing else. Ability to employ the mind at will while in pain is determined by two factors: sensibility to pain varies with the individual, and the voluntary power to render one's self more or less oblivious to pain varies with education and training. Obliviousness to pain, or to impressions that would usually cause pain, may be due to other involuntary mental states, especially violent emotions, which in themselves are most powerful in limiting or narrowing the field of consciousness to perceptions and ideas in harmony with them. In the indescribable excitement of battle wounds that would be painful go unnoticed until the excitement has subsided, when they claim the undivided attention of the sufferer, and even artificial means in such cases may prove ineffectual in overcoming it, when before a simple state of mind was sufficient to prevent perception of pain.

You will all recall the experiment of boyhood, when you were told that a pin could be plunged in your calf without causing a painful sensation, and the experimenter hit you a sound rap with a lath and was successful in rendering you oblivious to the prick while you had not yet had time to recover from the sting of the blow. There could be no more simple demonstration of the power of one intense impression to obliterate or prevent the occurrence of another of less intensity. In its essence the principle here involved of the prevention of a pain by a pain more intense, is the same as that which is operative for any intense state of consciousness as opposed to one of less intensity. For the same reason concentration of thought (imagination) from emotional causes may be so intense as to preclude the entrance into consciousness of anything not in harmony with the dominant emotional state and accompanying ideas. You have but to recall the celebrated examples of religious ascetics, who in fasting, prayer, and immobility on the tops of columns remained indefinitely oblivious to the pangs of the flesh; of others who maintained a given posture of supplication or prayer until so fixed by tissue changes that movement became next to impossible; of religious martyrs who found joy in what would be pain to another. Such examples of voluntary or involuntary experience of pleasure in that which could only cause pain in ordinary persons are simply examples of emotional limitation of the field

of consciousness to pleasant sensations to the exclusion of pain. Such a state of consciousness may even go so far as to cause impressions normally painful to become pleasant. In some parts of Russia the knout is one of the essential instruments of the household,—even more necessary than kitchen utensils; for the wife finds joy in the lash administered by the husband as a proof of his love. If these Russian women complain of marital neglect, it is because their husbands have not shown sufficient interest to give them a few telling stripes with the whip.

Pain, then, may be influenced by the intellect, the emotions, or the will; it may be eliminated from consciousness when there is an ordinarily efficient cause for it, or it may be created when there is entire absence of any physical cause for it. Allow me to cite a few examples from literature and my own experience which the previous discussion I hope will serve to explain.

“During the year 1862 I was called upon to give chloroform to a very nervous and highly hysterical girl, who was about to have two sebaceous tumors of the scalp removed. It was found that there was no chloroform at hand. I took the inhaler, which had no odor of chloroform. Having sent for the chloroform, I placed the inhaler over her face to accustom her to it. She at once began to breathe rapidly through it. In half a minute she said, ‘Oh, I feel it; I feel I am going off;’ and, as the chloroform had not yet arrived, she was told to go on breathing quietly. At this time her hand slipped down by her side and I pinched it, and again harder and as hard as I could, and to my surprise she did not seem to feel at all. Finding that this was the case, I asked the operator to begin, and he incised one of the tumors and pulled out the cyst. At this time I had removed the inhaler, and, wishing to see the effect of her imagination, I said to the operator, who was about to remove the second tumor, ‘Wait a minute, she seems to be coming round.’ Instantly her respiration, which had been quiet, altered in character, becoming rapid, as when I first applied the inhaler, and she commenced to move her arms about. I then reapplied the face-piece and the second tumor was removed. The patient felt no pain and was unconscious of all that was done.”

“Exactly ten years later, that is, in 1872, I met with a similar case. On June 16, 1872, Kate Levy, aged twenty, came to the Dental Hospital of London to have some carious teeth extracted, but, as more than one sitting was deemed necessary, it was pro-

posed to remove the two most painful and difficult teeth, and then order her to come again. This patient, like the last, was of a very hysterical temperament, but had nitrous oxide administered without any difficulty, and the extractions were performed; when she came to herself she refused to sit up in the chair or to push the piece of wood from between her teeth (where it had been placed for the purpose of keeping her mouth open), that is, she remained perfectly motionless, not taking any notice of surrounding objects, and not doing anything she was told to do. That she was conscious I knew by the expression of her face, by the quivering of both eyelids, and by the reflex action which immediately ensued on touching the conjunctiva. I therefore said to the operator, 'Well, if she is still unconscious there will be time to remove another tooth,' for eleven teeth and roots had to be extracted, and, to my surprise, this was done without any apparent suffering. I then remembered the previous case, and said to the operator, 'Now she is coming round.' She thereupon opened her eyes, sat up, and recovered in the usual way that patients do. She came again on June 21, and, wishing to try the influence her imagination had on her sensibility, I determined to administer air only. She breathed this for a few seconds, and on my calling the students' attention to her mode of quiet breathing, she began to inhale the air more deeply, and then, on my giving her the cue by saying to the students present, 'Now, you see, when I lift up her hand, and then let it go, it will fall heavily,' it turned out as was predicted; then saying, 'Now, you will find she will breathe rapidly and then cease to feel pain, although she will know something is being done,' I removed the face-piece. The operator then commenced his extractions, removed four teeth, and in the hospital note-book it is written: 'The patient breathed air only through the inhaler; one firm tooth, two firm stumps, and a temporary tooth extracted; said she felt no pain, but felt the teeth coming out.'"¹

These examples are clear demonstrations of the effect of idea to prevent pain.

Quite as interesting from a practical point of view is the influence of idea to cause pain. I believe any of you can experiment on himself in such a way as to satisfactorily demonstrate this possi-

¹ Illustrations of the Influence of the Mind upon the Body, D. H. Tuke. H. C. Lea's Son & Co., Philadelphia, 1884.

bility. If one concentrates his attention on any given part of the body, in a short time he will begin to perceive sensations in that part which previously did not exist, and they will be found to come and go with the direction of attention to or from the part, and a pain may be thus created. Dr. Tuke¹ cites a case related as occurring in the year 1607, of a parson's wife in England who consulted her physician, and was told that she probably had sciatica. Thanks to the idea implanted in her mind, she developed sciatic pain the same night, though before seeing her physician she had had no symptom of sciatica. This is an early example of unintentional creation of a symptom by suggestion, a proceeding that has been very cunningly utilized by a certain class of modern charlatans who claim to possess special powers of divining the nature and symptoms of disease in a patient without any description of symptoms by the patient. I need but sketch the manner of procedure: the operator, if she—for many such are women—by some evident sign is unable to guess the part in which the patient suffers, proceeds cautiously to palpate and adroitly learn from the patient the seat of trouble; but failing in this, she boldly asserts that the patient is subject to this or that symptom, and discourses learnedly about causes and means of cure. If the patient be a matter-of-fact person, the trick fails; matter-of-fact persons, however, rarely consult such charlatans; their clientele is composed of impressionable nervous persons, who come believing and with an all-embracing faith, and leave with the conviction that they have the aches and pains that have been suggested to them, provided they have not inadvertently and unconsciously revealed any malady with which they may be suffering. Such miraculous powers of divination engender a similar faith in curative power, and in the great majority of cases they are benefited, and often cured if the symptoms happen to be of a functional (mental) kind.

I recall a remarkable instance of ideational pain that came under my observation in a certain nervous clinic in Paris. Two girls in their twenties came for the same trouble, presenting identical symptoms, both complaining of excruciating pains in the lower limbs, of girdle pains around the trunk, and both walked with an ataxic gait. These patients occupied the same room; one had developed these symptoms, and a short time later they appeared

¹Op. cit.

in the other. The patient that first developed them was found to present all the objective signs of locomotor ataxia; her companion had developed all the subjective symptoms of the disease and had imitated the ataxia, but presented none of its objective symptoms; she had developed them by imitation (idea). One had an organic disease of the cord; the other was immediately cured of all her symptoms by the assurance that nothing whatever was the matter with her beyond a too lively imagination.

Another very frequent cause of psychic pain lies in experience of physical pain. Many impressionable persons, as a result of trauma or actual disease processes, have pain in some part of the body. Sooner or later the physical cause of this pain is removed or disappears; the pain, however, continues indefinitely after the removal of its original cause, and is thus purely an ideational pain, the reason for the continuance of which lies solely in the conviction that the original physical cause is still acting. I might cite many examples of this kind from personal experience. I feel sure that dentists often meet cases in which the teeth remain sensitive and painful after all physical cause for such a condition has been entirely removed. As an example of this condition, I recall a man in his fifties, a laborer, who injured his right arm while using a shovel, and was obliged to abandon work for some time. When he tried to resume work he was unable to do so because of pain in his arm. This incapacity had continued for a year, when he came to the clinic for advice. All his symptoms were subjective, and he was told that a few applications of electricity would cure him. In two weeks he was working as before.

The emotion of fear coupled with idea is a most potent cause of purely psychic pains. You are all, doubtless, familiar with the fact that many students of medicine imagine that they discover the symptoms in themselves of the diseases they are studying. I recall the case of a young doctor who was quite convinced that he was developing locomotor ataxia because he was brought into contact with many patients suffering with that malady. He had pains and disturbances of sensibility in the legs and the ulnar borders of the arms and hands, a girdle sensation, some disturbances of the functions of the bladder, and even thought he detected some ataxia. The interesting feature of this case was that though rationally convinced that all these symptoms were imaginary, they continued to trouble him for a year or more after, the abnormal sensations

obtruding themselves in consciousness suddenly when he was occupied intensely with other matters. The psychology of this case seemed to be that fear of a possibility had engendered a habit of attention to bodily sensations which were at first interpreted as proof of the oncoming of ataxia, and that this habit continued after the intellectual conviction of its imaginary nature had been established, so that for a long time any slight sudden pain had power to evoke the old fear and consequent attention to sensations having no significance whatever, and which only a strong effort of the will could banish.

A more direct example of pain due to fear is that of a butcher who in the effort to hook up a piece of meat slipped and became suspended by the arm on an adjoining hook. When taken down he was suffering agony, but examination showed his arm to be uninjured; he had been suspended by his coat-sleeve. There is a remarkable case related of a distinguished physician who was able at will to produce a more or less severe pain in almost any part of the body.¹

Such examples might be indefinitely multiplied, but I think I have cited enough to make it clear to you that the mind exercises a most profound influence on bodily sensations.

Expectation of a sensation greatly enhances its intensity, and for this reason we feel pain more acutely if we expect it. Doubtless many of your patients thus suffer more at your hands than they would were they not dreading the ordeal of your ministrations.

Before concluding this lecture with some practical hints with reference to your attitude towards patients and to the distinctions between psychic and physical pain for purposes of diagnosis, I wish to add a few more striking examples of the effect of the mind to cause or remove abnormal symptoms. Dr. John Brown, of Edinburgh, wrote a prescription for a laboring man, telling him to take that and he would come back in a fortnight well. He returned at the appointed time well and hearty. Struck by the success of the medicine prescribed the doctor looked for a record of what he gave him; but the man said, "Oh, I took it, I swallowed it,"—the paper.²

The following case is an illustration worthy of comment from several points of view: "An event in the life of Andrew Crosse,³

¹ Tuke, *op. cit.*² *Ibid.*³ *Ibid.*

the electrician, illustrates in a striking manner the power of the will over threatening disease. In this case the symptoms were those of hydrophobia. Mr. Crosse was severely bitten by a cat that died the same day of hydrophobia. He appears to have thought little of the circumstance, and was certainly not nervous or imaginative in regard to it. Three months, however, after he had received the wound, he felt one morning great pain in his arm, accompanied by extreme thirst. He called for a glass of water. He describes his experience in his own words: 'At the instant that I was about to raise the tumbler to my lips, a strong spasm shot across my throat; immediately the terrible conviction came to my mind that I was about to fall a victim to hydrophobia, the consequence of the bite that I had received from the cat. The agony of mind I endured for an hour is indescribable; the contemplation of such a death—death from hydrophobia—was almost insupportable; the torments of hell itself could not have surpassed what I suffered. The pain, which had first commenced in my hand, passed up to the elbow and from there to the shoulder, threatening to extend. I felt all human aid was useless, and I believed that I must die. At length I began to reflect upon my condition. I said to myself, either I shall die or I shall not die; if I do it will only be a fate similar to that others have suffered, and many more must suffer, and I must bear it like a man; if, on the contrary, there is any hope of my life, my only chance is in summoning my utmost resolution, defying the attack, and exerting every effort of my mind. Accordingly, feeling that physical as well as mental exertion was necessary, I took my gun, shouldered it, and went out for the purpose of shooting, my arm aching the while intolerably. I met with no sport, but I walked the whole afternoon, exerting at every step I took a strong mental effort against the disease. When I returned to the house I was decidedly better; I was able to eat some dinner, and drank water as usual. The next morning the aching pain had gone down to my elbow, the following it went down to my wrist, and the third day left me altogether.¹ I mentioned the circumstance to Dr. Kinglake, and he said he certainly considered that I had an attack of hydrophobia, which would possibly have proved fatal had I not struggled against it by a strong effort of mind.'” (“*Memoirs of Andrew Crosse*,” p. 125.)

¹ This is distinctly descriptive of hysteria.

I must humbly differ with the opinion of Dr. Kinglake concerning the nature of the case. This, to my mind, is a case exactly like that of the young physician who feared ataxia. The gentleman probably had a transient attack of gout, which he walked off. By chance he felt a pain in the hand that had been bitten, and this awakened all the other supposed symptoms of hydrophobia. However, if Mr. Crosse had not exerted his will, as Dr. Kinglake said, he might have died of the disease he imagined he had. I have no doubt that cases of mental hydrophobia occur and end fatally; and in epidemics of a terrible kind, like cholera, doubtless the imagination, excited through terror, claims many victims, and that independently of infection. In support of this allow me to quote a case of Dr. Lisle:¹ “This physician recognized the utility of the imagination in the treatment of disease, and was in the habit of prescribing two kinds of silver-coated bread-pills; one kind was invested with violent purgative qualities by its name only. He had under his care a man who believed himself to be afflicted with a most obstinate form of constipation, and one day he told this patient that he would give him a most violent purgative, which would certainly render him very ill. The patient was ordered to take five of these silver-coated bread pills, an interval of a quarter of an hour between each. After the third pill the patient was well purged, and in seven hours the bowels were acted upon more than twenty times. He was jubilant at the successful operation of this new purgative, but was almost in a state of collapse.”

There could be no more striking example of the effect of the imagination upon the organic functions of the body, and I believe it fully supports my contention of the gravity of fear as inducing even fatal disease.

You will note that in this discussion I have made no reference to hypnotism as a means of influencing pain. I have purposely avoided it, because the time at my command will not permit more than allusion to it. Hypnotism, in fact, is nothing more than an intensification of the suggestive ideational influences that we employ daily in our treatment of patients,—to create mental states, or to modify those that may be present.

I wish to conclude this lecture by some practical deductions that are the logical sequence of what I have attempted to present.

¹ Tuke, *op. cit.*

Since your calling is one that almost necessarily causes pain, seek to understand the temperament of your patients and try by adroit influence to lessen their susceptibility to pain, both by diverting their attention and by resort to innocent methods of deception. Your own observation will teach you to know that you must approach and treat patients individually; you will learn that the frank and positive assurance of painlessness to follow some futile application is often productive of satisfaction to the patient and renown to the dentist. Timidity or lack of assurance in your attitude is almost sure to cause an antagonistic and unprofitable state of mind in your patients. I think you should never rely on the known anæsthetic local effect alone of certain drugs, but always seek to increase it by assurances of their efficacy. Of course, there are persons little open to suggestive influence, but you will soon learn to distinguish them from the great multitude of those open to suggestion. You will also learn that the suggestion in itself is often of little value; the operator—his personality and manner of approaching a timid and nervous patient—does much to render his “suggestion” effectual.

Another practical point that demands consideration is the importance for the welfare of the patient of distinguishing psychic pain from pain having an adequate physical cause. You have already seen that suggestion (idea) is effectual in both kinds of suffering, and that simply because by ideational influence we are able to abolish pain, we are in no wise justified in assuming that there was no physical cause for pain. Your office is to treat and remedy physical conditions often causing pain, and, however expedient any means of abolishing pain may be, your ultimate purpose is to remove any physical cause there may be for pain; and it is your most important duty to determine whether a given pain seemingly arising from the teeth is actually caused physically or is merely psychic. Are there means of deciding this question? I think there are in the vast majority of cases. Of course, when you find evidence in the condition of the teeth for toothache or facial neuralgia, your course is plainly indicated; it is in cases where there is a doubt that care must be used before resorting to operative interference. There can be no question that pathologic conditions of the teeth are very frequently the cause of facial neuralgias the seat of which is not obviously in the teeth, and in such cases the most care is necessary. The temptation to resort to extraction of

teeth when no other cause for facial pain can be readily discovered is very great, and I would caution you against yielding to it. If you as dentists can find no cause for pain in the teeth or jaws, it is your duty to shift all responsibility for extraction of the teeth upon some one else,—the patient's medical adviser or the patient himself; and if you are convinced that the teeth are not at fault, you should even refuse to be a party to an operation for which you can find no reason. You will remember that pain about the head, face, and teeth may be due to many causes. Take, for example, trifacial neuralgia; it may be due to disease of the nose, to disease of the antrum, to disease of the ear, to some infection like malaria, to disease of the Gasserian ganglion, to a psychic condition. There is not time to discuss the differential diagnosis of all these possible causes, but I would say that you can easily and practically define your own position and responsibilities in a given case by limiting your diagnosis to the conditions found in the teeth and jaws. Since, however, I have emphasized the psychic aspect of pain, you will permit me, in conclusion, to enlarge upon its differential diagnosis from pain due to physical causes.

Physical pain obeys certain laws in its manifestations that aid us in deciding the doubtful case. I cannot go into them all, for I have already taxed your attention and patience unduly; but you will bear with me a few moments longer. Mechanical irritation of a nerve-territory that is already the seat of physical pain is sure to increase the pain arising in it, but when pain in a given area is psychic, mechanical irritation in it does not produce identical effects. With actual physical pain, the increase of pain is in direct proportion to the degree of direct physical irritation; with psychic pain the increase of pain from direct physical irritation of the area involved is not proportionate to the degree of irritation,—that is, slight physical irritation produces a painful effect equal to that which follows severe irritation. In actual organic disease of the nervous system there are found some exceptions to this, as in the hyperæsthesia sometimes observed in locomotor ataxia; but in such conditions the areas implicated enable us to refer it to an anatomical cause—to nerve-roots or nerves that control definite areas. Thus a pain limited to a certain known distribution of a sensory nerve or nerves is almost certainly due to a physical cause; for psychic pain can be limited to the distribution of a nerve only when the individual affected is acquainted with the distribution of

nerves. Another point: where small areas are concerned, the limitation of the area is clearly marked in case the pain be due to an actual physical cause; whereas, a psychic pain is more apt to be indefinitely limited in relation to the area from which it may be excited or increased in intensity by mechanical irritation; that is, the superficial area to which a psychic pain is referred varies extremely during the same examination and on repeated examinations.

Again, to refer to the teeth directly: you have all, perhaps, found some difficulty in locating an abscess at the root of a tooth because more than one tooth was painful to irritation, but you have usually been able to locate the trouble by finding the most painful spot on the gums or on the jaw. Psychic pain about the jaws would lead you astray because of the absence of definite localization.

I would modestly suggest, as one only speaking from a very general point of view, that you proceed with caution in your operative interference when you have not definite facts upon which to base your action, remembering always that the teeth are very frequently not the cause of pain that is referred to them.

In your observation of patients of all classes and of all conditions of life you will notice certain peculiarities that will strike you as remarkable. In the long run, if I may venture to foretell one thing, you will be surprised by a difference between your country and city patients: country patients, in a sense, will endure pain better than city patients; I say, in a sense, for the reason that the man who lives close to nature and is in a robust physical condition from a closer relation to the elements of nature is less sensitive to pain than his more highly and artificially organized brother that has been reared and lives in the city. But if the country patient is less sensitive to pain he is at the same time less able to endure it than his city cousin. It is well known that city-bred men make better soldiers at first than country-bred youth; the former have more endurance and bear hardships better. Thus you will observe among country-bred patients that they will readily endure an extraction before which a city patient would quail; a city patient, to avoid an extraction, would endure a thousand times more pain in treatment or arrangement of a tooth, while the country patient would say, pull it out and let's have an end of it. In the one case fear of pain cultivated by reading and example renders more sensitive, while endurance of it is strengthened by the will to have a cosmetic effect for which the other does not care.

Pain is not an unmixed evil: it has been proved that the brutality of the cruel criminal is in direct proportion to his lack of sensitiveness to pain. Our sympathy with the distress of others is in direct proportion to our sensibility to pain.

If it be necessary for me to urge you to save teeth, I need only remind you, from a selfish stand-point, that a man with an artificial upper and an artificial lower, has reasons to congratulate himself as far as his pocket and nerves are concerned: he knows that he has escaped from your bills and your ills.

EXPANSION OF GUTTA-PERCHA.

BY DR. FRANK T. TAYLOR, BOSTON, MASS.

THE value of the expansive action of gutta-percha is often overlooked. Most of us have seen teeth which contained gutta-percha under metal fillings, and which had a weak side split off by the expansion of the capping.

Advantage can be taken of this expansive quality of gutta-percha by using it to separate teeth.

In many cases more space is needed than is easily secured by wedges in the ordinary way. In such cases pack the pink base-plate gutta-percha into the cavity until it completely fills both the cavity and the space between the teeth, pressing firmly against the adjacent tooth, or filling both cavities, if there are two.

This method is especially useful in cases where bicuspid and molars have moved together and space is required for properly contoured fillings.

The gutta-percha by its slower expansion, secures the necessary space in a few months without soreness of the teeth or annoyance to the patient.

The necessity of keeping the gutta-percha from crowding up into the gum and of protecting the pulp from the pressure of the expansion where the dentine covering is thin will be obvious.

Reports of Society Meetings.

THE NEW YORK INSTITUTE OF STOMATOLOGY.

A MEETING of the Institute was held at "The Chelsea," No. 222 West Twenty-third Street, New York, on Tuesday evening, April 7, 1903, the President, Dr. J. Morgan Howe, in the chair.

The minutes of the last meeting were read and approved.

Dr. Brockway, the chairman of the committee, presented a memorial of Dr. C. A. Woodward. The memorial was unanimously adopted.

Dr. Geo. B. Terrell read a paper descriptive of a new method of regulating devised by himself.

(For Dr. Terrell's paper, see page 594.)

DISCUSSION.

Dr. C. O. Kimball spoke of a similarity that existed between this appliance of Dr. Terrell's and the method used by Dr. Baker, of Boston, in that they both made use of the interaction of one jaw upon the other, with this difference, that what Dr. Baker's appliance accomplished by a pulling force, Dr. Terrell's accomplished by pushing. In Dr. Baker's appliance the tendency was constantly to pull the crib off the teeth, and for that reason it was to be cemented on, while pressure of the interaction of the jaws upon the appliance as devised by Dr. Terrell only tended to hold them more firmly in place. The advantage of the latter method was obvious, as it permitted the removal of the appliances during mastication and for the purpose of cleansing. Dr. Kimball presented an appliance of this kind just made for him by Dr. Terrell for a reverse condition,—the protrusion of the upper jaw. It had been found in this case, after the upper jaw had been expanded, that the child could bring her lower jaw forward into correct position, and that when it dropped back it weakened the whole line of her face by the receding chin. The attention of the child's mother, who was anxious to have some teeth extracted, was called to this change in the whole physiognomy when the child bit forward in the proper position, and

she was instantly convinced. Judging from the experience of another case, Dr. Kimball was of the opinion that holding the jaws in proper position for three or four weeks' time would so thoroughly fix the habit that it would not be comfortable for them to close in any other position.

Dr. S. A. Hopkins, of Boston, read a paper entitled "Medical Aspects of Dental Lesions."

(For Dr. Hopkins's paper, see page 576.)

DISCUSSION.

Dr. R. H. M. Dawbarn considered the essential features of Dr. Hopkins's paper to be two: First, a very thorough *résumé* of the ways in which troubles about the teeth might have a direct bearing upon disease in general. This was true to a much greater extent than one would realize. On this phase of the subject he could not add anything to the essayist's remarks. The essayist had stated that otitis media was almost always preceded by catarrhal inflammation of the nasal mucous membrane. Dr. Dawbarn was inclined to think that the true cause much more frequently was "adenoids," more properly called lymphoids, of the pharynx. Children who are mouth-breathers are almost always sufferers from this condition, and it was the duty of the dentist to call the patient's, or the patient's parents', attention to it, with the view of having the condition remedied. As high as twenty-five per cent. of all children in such a variable climate as that of the northeast American seaboard were affected with such lymphoid growths.

Regarding the list of microbes found in the human saliva, Dr. Dawbarn remarked that Dr. Nicholas Senn had given about twenty-six of them. Dr. Dawbarn wished to say that Dr. Hopkins had attacked this problem in the right and scientific way, and that in this manner alone do we little by little accomplish anything.

There was one point concerning which Dr. Dawbarn thought we should direct attention and study,—namely, the question why, in regions like the mouth and the rectum, rankly infected continuously by microbes, nevertheless injuries and wounds do not do badly. Given a case of fracture of the lower jaw, and it will in almost all cases be found to be compound, because the gingival mucous membrane is adherent closely to the periosteum, and both are inelastic. Consequently saliva, with its myriad microbes, is all the while bathing the line of fracture. Nevertheless, as a rule, there

is good speedy union, and without blood-poisoning. Or, take the case of a fistula in ano, slit open from end to end and necessarily brought in contact with fæces. Such cases are very frequent, and yet the surgeon has little fear of septicæmia in consequence. Why is this? Any fracture elsewhere in the body treated to a continuous bath of saliva would do badly, indeed, without a doubt (unless it is the patient's own saliva), and any wound elsewhere contaminated daily by pouring fæces over it would probably develop erysipelas or some other ugly microbic invasion.

Dr. Dawbarn was of the opinion that the explanation of this contradiction lies in the fact that from birth until death the regions under discussion are vaccinated, so to speak, with ptomaines and toxines, the products of the life activities and death decompositions of the germs normal and native to that region; and because of such vaccinations, the outcome of the numerous slight lesions so frequently occurring, the flesh thereabouts is in some way made better able to combat and overcome any ill results when greater wounds are received in the mouth or rectum. Then too it is a fact worth noting that each healthy individual's saliva is not dangerous to himself, even elsewhere than the mouth, wounds, or fractures, though this secretion would be perilous to another individual. Probably the reason for this is the one already mentioned,—a continual vaccination. We have all seen wounds upon the hands of street urchins sucked and washed clean by their spittle, just as a dog cleanses himself, and with no ill result.

Dr. E. A. Bogue was quite surprised that Dr. Hopkins did not bring other things into his paper. Within the last few weeks there had come under his observation three, perhaps more, cases where the necessity for a better understanding between medical and dental men became very apparent. The last case had presented only a few days since, a lady with an impacted lower molar tooth that somebody had undertaken to remove. In this case the mouth was capable of being opened a little over a quarter of an inch. Dr. Bogue had recommended cold applications, but the lady went away and used hot applications, with the result that within forty-eight hours she was not expected to live. He knew of a young man who had died from the same cause a few months ago.

Dr. C. O. Kimball stated that it had come to his observation, as to others', no doubt, that disease entirely outside the mouth gave rise often to symptoms in the mouth. Dr. Kimball was reminded

of a case reported to the society some years ago, a case of herpes zoster, where the symptoms simulated precisely the symptoms of pulp-stone or of pulpitis. This was in line with what Dr. Hopkins had suggested, that we should know more thoroughly the relation of the teeth with the general system. In the case he had just spoken of there had been consultation with some of the best surgeons in New York beforehand. Their judgment had been equally at fault with his. There were so many cases coming up all the time, requiring us to know the relations of the teeth to the general system, that the suggestions of such a paper as Dr. Hopkins's were very valuable.

Regarding the second half of the paper, it seems as if Dr. Hopkins had reached the point that many of us had been striving for years to reach,—viz., proving in a scientific manner, and not merely by actual daily practice, that cleanliness of the teeth affects the general health, which has been a matter of common clinical observation.

The President thought we were greatly indebted to Dr. Hopkins for this presentation of such an interesting subject. Dr. Howe related an experience in his own practice confirmatory of one phase of Dr. Hopkins's paper. The case was that of a young man with a fine set of teeth, who presented himself with a history of pain in a tooth sufficient to keep him awake. He located the pain in a certain lower bicuspid tooth that was perfectly sound with the exception of a small gold filling. Tests of ice and percussion failed to reveal anything but the normal response, and after much persuasion the man was induced to let it alone till the afternoon. He did not appear until the next morning, when he again complained of pain in that tooth, and was so urgent that something be done that the tooth was drilled into far enough to show normal sensitiveness of dentine, when Dr. Howe was confirmed in the opinion that the cause of pain must be looked for elsewhere. He advised consulting his physician. The next morning the patient presented himself with a story of pain in a totally different tooth. He was then told that it was very evident that no tooth at all was at fault, and that he should see his physician for constitutional treatment. The pain eventually subsided without any tooth whatever being operated upon. Dr. Howe cited this case as illustrating the point made in Dr. Hopkins's paper of the necessity of discriminating between diseases of the teeth and diseases of some other parts indirectly affecting the teeth.

Dr. H. L. Wheeler mentioned the case of a young woman who came to him with a swelling in the gum of a lower cuspid tooth. She had been to a dentist several times recently and although he had removed the calcic deposit from her teeth, he had told her that there was nothing the matter with this particular tooth. The tooth itself was perfectly sound and there was no history of an injury and no pockets around the tooth. There was the characteristic odor of pus infection about the patient. Upon opening the tooth a putrescent pulp of long standing was found and a small quantity of very thick pus exuded. In this case the lack of a proper diagnosis endangered the patient's life.

Dr. Leo Green, in this connection, mentioned several cases he had seen this winter where acute intestinal constipation resulted in ulcerative stomatitis, all of which was completely eradicated by proper doses of castor oil.

Dr. Hopkins, in closing, thanked the Institute for its courtesy in discussing the paper. He had purposely omitted mentioning the subject of adenoids in the mouth, as he had previously brought that subject before the society, and he thought it a repetition to mention it now.

Dr. Hopkins thought that testimony given by patients concerning the dental practitioner whom they had last consulted should always be held with a little suspicion. He had never known a patient, in all his practice, to get anything of this kind straight. By a too credulous belief in these stories a great deal of injury might be done to a brother practitioner. A case in point was that of a patient who presented himself with a story of the apparent inability on the part of a brother practitioner to treat a dead tooth. When Dr. Hopkins attempted to open the tooth there was so much resistance on the part of the patient that Dr. Hopkins finally told him that he could readily see why the other dentist had failed, and added that unless he was willing to submit to his method of treatment he must go elsewhere and go quickly. It was quite possible that a man beginning practice might not have the effrontery to talk to a patient in this manner.

Another patient had come from a well-known specialist in Boston suffering from severe neuralgic pains which the specialist thought might come from the teeth. The teeth were strong and good, but were covered with tartar. Dr. Hopkins told the patient that while the removal of the tartar would probably have little effect

on her condition, still it was indicated and it should be thoroughly removed. She thereupon went immediately to his friend the specialist and stated that Dr. Hopkins had said that it was merely a matter of tartar, and as soon as that was removed she would be all right.

Upon motion a vote of thanks was extended to Dr. Hopkins.
Adjourned.

FRED. L. BOGUE, M.D., D.D.S.,
Editor The New York Institute of Stomatology.

Editorial.

AVOID THE ROAD TO THE POOR-HOUSE.

THERE are two closing scenes of life that send an unwelcome shudder to every man: one is the final ending of all humanity, and the other, the exceptional close of life's activity in the place prepared by municipal bounty for the financially wrecked. To the philosopher the first, the inevitable end, is always regarded with the feeling that it is part of the great experiences with which humanity must certainly deal, and, being such, it belongs to and is part of the eternal progress towards increased development, both physically and mentally, here and throughout eternal æons. Death, then, to the wise thinker is the key to unlock the inner sanctuary, the treasure vaults, that hold the undeveloped ideas that become in the centuries the active intellectual life of the coming generations. Hence the typical old man with his scythe is the real benefactor of the race, and, being so, we can leave him to his work of mowing down humanity in order that new men, new measures, new ideas, may become dominant in the world. The man in life is more important than the man in death, and we may leave the latter and deal with the former, to induce him, if possible, to travel away from that path that leads directly to the poor-house, or its equivalent, an old age of want.

Dentistry is not a profession that can amass great wealth. This is only possible with many hands, and the dentist has but two, but properly conducted it will place its votaries into comfortable pos-

sessions, and if these be carefully guarded, it must eventually end in a life satisfactory to the individual and those dependent upon his labors.

The thought that dentistry is becoming too crowded is dominating the profession, and in view of the number yearly being graduated from our colleges, the feeling is a natural one and must be accompanied, in the altruistic mind, with the fear that this overcrowding will lead to impoverishment of the many. The writer does not sympathize with this gloomy thought. In a sometime since published article he endeavored to show that the increase in numbers was not in advance of the increase in population, and that all graduates of the present and for many years in the future would be needed.

While this is certainly true, the numbers will force a closer observance of those economics and business methods so helpful in the making of a comfortable life and independent old age.

The impossibility of placing old heads on young shoulders has been demonstrated in all ages of the world, and what is equally difficult is to make young heads believe that vigorous young life will come some day to an end. It is this feeling that the physical activities are a permanent capital that makes the young dentist, as a rule, improvident. His profession furnishes, it may be, all that is needful for comfort, with some of the luxuries, and this fact engenders heedlessness as to that future when energy will have slackened, when the eye will have become dimmed, and the hands will have in great degree lost their mechanical cunning.

The writer has for many years been impressed with the lack of business ability among professional men. It is apparent in all classes, and is not, by any means, confined to dentists. Indeed, as a rule, there are more with business qualifications in this profession than elsewhere, but these will grow fewer as the standard of entrance to dental colleges is increased. The reason for this is not far to seek. The young man graduating from high school or college, and immediately entering a professional school, has had no opportunity for the study of business principles. He passes through the curriculum of his school, graduates, and commences his professional career ignorant of those things upon which success must be attained. Some fail to acquire this knowledge through experience, hence are always loaded with anxious cares, ill luck, as they conceive always has been their portion, and in the end, figuratively,

and with some actually, they find the path that leads directly to the poor-house.

It has been said of dentists that when they die their estates consist of a life insurance. It is feared many have not been thus provident.

The experience of a professional life would furnish many illustrations of both sides of this, the provident and improvident. The late Dr. Allport, an excellent example of the first class, for he died comparatively wealthy, mourned, in an article written just prior to his death, this lack of business foresight in dentists. He knew, as we all know, that the man in dentistry who died comfortably well off is not generously distributed throughout the dental profession, but there are sufficient of his quality of mind to cause his example to be of benefit to his co-workers starting out in life. The improvident man, with unbusiness habits, is, unfortunately, plentifully distributed, and his life experience is a disastrous exemplification of the need of something more than a mere professional training to get the best there is out of the world of activity.

The professions are full of sorrowful examples of this latter class. The writer calls up in memory some who have written their names high on the scroll of dental fame, and yet have ended their lives in "Homes," a genteel synonym for the poor-house. Is there anything more depressing than to find one who has lived years and enjoyed the confidence of a large and influential practice at last reduced to penury and dependence on charity. Every one long in practice is familiar with instances of this. The writer has known, alas! too many. The memory of these unfortunates is an ever-present disagreeable reminder of the improvident in dentistry and of the necessity of active work to lessen the growing evil.

The average successful practitioner forgets in the day of success that he is being constantly weighed in the balance by his patients. They grow older with him, and feel that he must be a partaker of the same disabilities from which they suffer. They recognize that age in a dentist is a serious handicap. It may bring wisdom and skill in diagnosis to the medical man, but beyond the sixtieth year there is ever-lessening power to the dentist. The wise parents, feeling thus, will say, in effect, "We must start our children with a young operator, that they may grow up with him," and then the old operator finds his young patients gradually leaving him, and for this he must be prepared.

What, then, is the remedy? Active competition must lead to more thorough teaching, both in theory and practice, and, above all, it must force a different method of procedure on the part of parents and guardians. If the young men after leaving school were placed in a business house or a commercial school for a year they would have a foundation that would make their entire life an easier problem, and then, superadded to this, should be given lectures in our dental colleges on the management of practice, from those who have made the most of their professional lives. It seems to the writer that this has become a most important part of the dental education of the future.

In this connection may the question be asked, Is it not time for the National Dental Association to make some attempt to follow the excellent example of the British Dental Association and establish a fund for the relief, in part, at least, of those who may have been stranded in old age, whether through their own mistakes or through unfortunate conditions? If this body would lead in the formation of a foundation with this object in view, it should be made in a few years available, and under proper precautions would be most valuable in giving the needed help to the most deserving.

A few, doubtless, remember one whose name was a tower of strength in the dental profession. His practice during his days of vigor was of the largest and his clientele the best, but dark days came to him. Unfortunate speculations left him without support in his old age. A few stepped forward under the gracious leadership of one of the true-hearted, and this leader of men was made comfortable for the remainder of his days, not in a poor-house or a home, but with those who could tenderly care for his needs. If this could be accomplished by the few, could not a great association do better? Is the time not ripe for this? If not yet, let not the first quarter of the twentieth century close without some effort being made in this direction. Let it not be said that dentistry was unable to keep a few from joining an ever-increasing procession, marching with haggard mien and faltering limbs on the well-worn pathway that poverty is ever treading towards the homes supplied by municipal and other charities.

MEDICAL RECIPROCITY.

THE following abstract from an editorial in *Science* indicates that our medical friends are beginning to feel the iron hand of State boards for medical examination, and it is understood that even the legal profession is beginning to revolt. As the world progresses in legal refinement State boards will be instituted for the examination of clergymen, and then we will see the novel performance of a minister being obliged to pass an examination before he can preach the gospel in the several States of this Union. This may seem absurd to some minds, but it is the logical result of this force by law.

"MEDICAL RECIPROCITY BETWEEN THE STATES OF THE UNION.

"The low requirements of some medical colleges, and the want of uniformity in the requirements for a license to practise in the different States, has resulted in a condition which entails much hardship on a physician who desires to remove from one and to engage in practice in another State. The rules of most State boards of medical examination and of health are so stringent that a physician or surgeon of years of experience and of acknowledged skill and education, and the specialist who may be renowned in his field of work, are obliged, like the recent graduate, to take an examination in all of the branches of medicine and surgery in order to secure a license to practise in the State of his adoption.

"To correct this evil it has been suggested by a member of the American Medical Association, and concurred in by others, that a national board of medical examiners be organized: that the board hold examinations at different seasons of the year in the various large cities, and that the diploma so obtained shall be recognized as a license to practise in any one or all of the States and Territories. The measure suggested seems to be practical and feasible."

"ALBA" DENTISTS CONVICTED.

ON July 2 Judge Beitler, of Philadelphia, sentenced George C. Courtright, president of the "Alba Dental Company," and William Powell, its manager, to one year's and three months' imprisonment, respectively, upon their conviction of conspiracy to defraud.

Louis Solomon, a dental student employed by the concern, who had been convicted of practising dentistry without a license and

without being registered, was at first fined fifty dollars and costs, but was later discharged, sentence being suspended.

The conviction was primarily due to the charge of a woman patient that her jaw had been fractured in the attempt to extract a supposed root. It was claimed by the prosecution that the supposed root was a portion of the bone, the fracture of which caused a long course of surgical treatment.

The committee having the matter in charge are to be congratulated in having secured these convictions. It has shown that the law can be enforced in Pennsylvania, and now that the beginning has been made, what is to prevent others equally guilty being brought to the bar of justice?

Obituary.

DR. CORYDON A. WOODWARD.

On the 7th of March, 1903, there passed from among us through the gate of death one of our most beloved and respected members,—Dr. Corydon A. Woodward.

Born in the State of Maine sixty-three years ago, he studied dentistry in the Baltimore Dental College, from whence he was graduated with credit, and for a time practised his profession in Rhode Island.

Removing to Cuba, he lived there eight years, but the unsettled condition of affairs there at that time compelled him to return to this country.

In 1871 he came to New York and became Professor of Prosthetics in the New York College of Dentistry.

He soon became known as a skilful and honorable practitioner, and took a high rank in the profession.

He was president of the New York Odontological Society in 1892-93. He assisted in the organization of The New York Institute of Stomatology, the first meeting of which was held at his house, April 19, 1895, and became its vice-president. Always active and zealous in promoting its object and interests, he gave to it the benefit of his sound judgment and advice, proving himself

"A friend of truth, of soul sincere,
In action faithful and in honor clear."

In recognition of his virtue and our source of loss in his death, we ask that this brief testimonial be placed upon the records of this society.

A. H. BROCKWAY,
GEO. S. ALLAN,
S. E. DAVENPORT,

Committee The New York Institute of Stomatology.

Miscellany.

ADRENALIN IN DEVITALIZATION OF PULPS.—In an article on Adrenalin, in the *June Items of Interest*, W. Clyde Davis, M.D., D.D.S., of Lincoln, Neb., claims that he can painlessly extirpate the pulp in from one to three minutes. His method is as follows:

"Apply dam, if possible, and dry cavity. If pulp is not exposed, but covered by a layer of softened dentine, apply first a drop of adrenalin, then one drop of a forty per cent. solution of formalin. If quite a distance from the pulp, use slight but continued pressure with a rubber plug for a few seconds. You can now excavate to complete or near exposure painlessly. You are now where we all usually make our application of arsenic for devitalization, and are ready to begin with the operation."

He now applies one drop of adrenalin, lays in the cavity a few crystals of cocaine, or a one-sixth grain soluble tablet; applies one drop of a forty per cent. solution of formalin, and exerts gentle pressure with a rubber plug, increasing pressure as no pain is experienced by patient, and in from forty to sixty seconds is able to uncover the pulp-chamber and pass broach along the side of the pulp-chamber to the apex of the root.

In case any pain is felt, he repeats the application, not omitting the formaldehyde. After a root-canal dressing of camphophénique has remained twenty-four hours, he fills the canals.

The advantages claimed for this method are, first, it is painless; second, it saves time; third, the color of the tooth never changes;

fourth, after-soreness is very slight, frequently wanting; fifth, the application is a powerful antiseptic. He claims that adrenalin alone is an obtunder of sensitive dentine.

THE MANIPULATION AND CARE OF CEMENTS.—To obtain the best results with any dental cement, care is required in mixing together the liquid and the powder. They should be placed on the slab sufficiently far apart that they will not accidentally commingle. A very little of the powder should be first mixed with all the liquid intended to be used in the mix, and thoroughly spatulated. This is an important point. While more powder may be added after mixing has been commenced, it is always detrimental to add any more of the liquid. The first portions of powder mixed with the liquid changes its chemical character and prepares it for properly uniting with the rest. Therefore, it becomes important that the first portion should be thoroughly mixed and incorporated with all the liquid intended to be used. Further additions of the powder should be made a little at a time, each addition being thoroughly spatulated. Especially is this important in summer time; it will make all the difference between smooth plasticity with desirable setting qualities and a granular consistence with objectionably quick setting. The usual method of *stopping* the liquid and the powder together is detrimental in all cases.

In order to prevent undesirable change in the liquid it should not be used from the bottle in which it comes, but a portion should be transferred to a bottle having a telescoping glass cap instead of a cork fitting within the neck. The S. S. White No. 6 office preparation bottle is, perhaps, the best obtainable. With the ordinary container, with ordinary handling, there will always be more or less of the liquid standing about the cork, exposed to the air, which becomes changed in character, and on each removal of the cork contaminates that contained in the bottle.

Platino-iridium is the best metal for the spatula, and if socketed into some other metal need not be especially expensive. Next to this, a high grade of German silver, the so-called "platinoid," may be used, or where a slight modification of color is not objectionable, coin silver or an alloy of silver and copper in proper proportions to give the maximum rigidity and hardness, would be beneficial from a chemical stand-point, supposing that a slight abrasion and chemi-

cal action of the metal should occur. Phosphates of these metals have a very salutary effect, whereas phosphate of iron, which is necessarily formed to a certain extent when a steel spatula is used, is very detrimental.

Cleanliness in every procedure in connection with a mix of cement is especially called for. An immaculately clean spatula and slab should be used for every mix.—DR. W. V. B. AMES, *Dental Cosmos*.

EXTRACTION OF CANINES.—Dr. L. P. Haskell, in the *Dental Review*, advises the extraction of canines in upper jaw when they are the only teeth remaining in that jaw.

SENSITIVE NECKS OF TEETH.—Apply saturated solution of carbonate of potassium in glycerin. Repeat at intervals until sensitiveness is relieved.—*Dental Review*.

Current News.

AMERICAN SOCIETY OF ORTHODONTISTS.

THE third annual meeting of the American Society of Orthodontists will be held on December 30 and 31, 1903, and January 1, 1904, in Buffalo, N. Y.

ANNA HOPKINS,
Secretary.

ST. LOUIS, MO.

MISSOURI STATE DENTAL ASSOCIATION.

AT the thirty-ninth annual meeting of the Missouri State Dental Association, held at Kansas City, May 19 to 21, 1903, the following officers were elected:

President, J. H. Kennerly, St. Louis; First Vice-President, F. W. Franklin, Kansas City; Second Vice-President, F. H. Achelpohl, St. Charles; Recording Secretary, H. H. Sullivan, Kansas

City; Corresponding Secretary, S. T. Bassett, St. Louis; Treasurer, J. F. Fry, Moberly.

Board of Censors.—J. C. Pasqueth, Mexico; A. L. Bridgeford, Macon; De Courcey Lindsley, St. Louis.

Committee on Ethics.—J. B. McBride, Springfield; J. A. Prosser, St. Louis.

Committee on Publication.—W. G. Goodrich, Chillicothe; Otto J. Fruth, St. Louis.

Committee on New Appliances.—J. F. Austin, St. Louis.

The next meeting will be held at St. Louis, third Tuesday in May, 1904.

SAM T. BASSETT,
Corresponding Secretary.

HARVARD DENTAL ALUMNI ASSOCIATION.

At the thirty-second annual meeting of the Harvard Dental Alumni Association, held in Boston, Mass., Monday, June 22, 1903, the following officers were elected for the ensuing year:

President, Charles E. Perkins, '90, Brockton, Mass.; Vice-President, Arthur W. Stoddard, '87, Boston, Mass.; Secretary, Waldo E. Boardman, '86, Boston, Mass.; Treasurer, E. Proctor Holmes, '88, Boston, Mass.

Executive Committee.—Waldo E. Boardman, '86, *ex-officio* Chairman, Boston Mass.; William P. Cooke, '81, for two years, Boston, Mass.; Harry S. Parsons, '92, for one year, Boston, Mass.

WALDO E. BOARDMAN, '86,
Secretary.

MINNESOTA STATE DENTAL ASSOCIATION.

THE twentieth annual meeting of the Minnesota State Dental Association will be held at the Dental Department of the State University in Minneapolis, on Tuesday, Wednesday, and Thursday, September 1, 2, and 3, 1903. All dentists are cordially invited to attend.

GEO. S. TODD,
Secretary.

LAKE CITY, MINN.

THE
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Original Communications.¹

THE SELF-HEALING CAPACITY OF THE HUMAN
DENTAL PULP.

BY W. D. MILLER, M.D., D.D.S., BERLIN, GERMANY.

It is a fact pretty generally known that in the case of certain animals the dental pulp may undergo reparative processes similar to those which take place in other soft tissues. These reparative processes are frequently observed in teeth having large pulps which are open at the base instead of being everywhere surrounded by narrow unyielding walls, as is the case in human teeth.

It is particularly the pulp of the elephant's tusk which furnishes us the most frequent examples of self-repair, and at any ivory-turner's we may find numbers of specimens illustrating this fact. The question is discussed at length in a series of articles entitled "Studies on the Anatomy and Pathology of the Tusks of the Elephant," beginning in the May number of the *Dental Cosmos* for 1890.

It would not be admissible, however, to conclude that the pulp

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

of the human tooth must possess the same reparative powers as does that of the elephant. It is, in the first place, devoid of lymphatics which everywhere else perform a very important part in taking up and removing pathological products; but especially it is so small that, being surrounded by unyielding walls, the minutest inflammatory focus must result in intense pressure and stagnation, with a marked tendency to breaking down of the tissue or extending of the inflammation, unless the pressure is relieved by a free exposure. It is for this reason that an abscess or centre of inflammation the size of a pin-head in the pulp of a human tooth may cause excruciating pain, while its presence on the surface of the body might escape notice altogether.

We may accordingly examine hundreds of extracted teeth without coming across a single case of self-repair such as is so commonly met with in ivory. Indeed, it has been very much doubted whether a suppurating pulp could or did ever of itself return to a healthy condition again, and, so far as I am aware, the first case of this kind was described by Gysi in the *Schweizerische Vierteljahrsschrift für Zahnheilkunde*, 1900, page 254. In this case an abscess in the horn of the pulp of an upper first molar had undergone an isolating process, the pulp shutting it off by throwing up a wall of irregular dentine followed by normal dentine.

A second case, in which an abscess cavity having the greatest similarity to those found in ivory had been isolated or encysted, was reported by me in the *Dental Cosmos*, 1901, page 853. In these cases the pulp has protected itself by throwing up a wall of calcific matter (followed by regular dentine), thus shutting off or encysting the offending part.

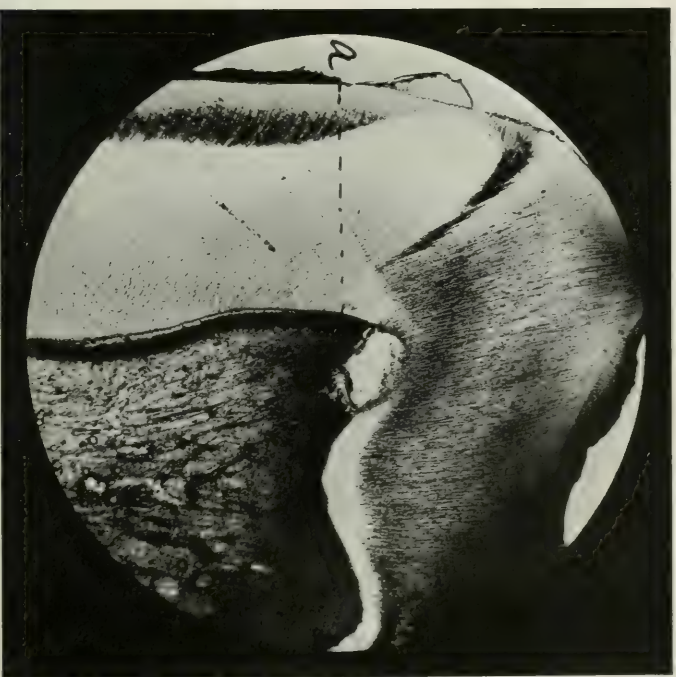
Since then two other cases have come under my notice, which are illustrated in Figs. 1 and 2. Both these teeth were found among a collection of teeth of unknown history. In the first case (Fig. 1) an upper bicuspid has been attacked by caries on the *approximal surface* and the buccal horn encroached upon. The pulp succeeded in throwing up a sufficient amount of calcific matter at *a* to isolate the diseased horn. In the second case (Fig. 2) we have a lower molar in which the enamel has been completely destroyed by decay and the dentine decalcified nearly or quite to the pulp. The caries, for some reason, stopped at this stage and the decalcified dentine became hard and black. In other words, it is a case of self-healing of the dentine. Strangely enough, we find a

FIG. 1.



Isolation of a diseased pulp-horn by masses of calcific matter partaking in part of the nature of secondary dentine. $\times 8$.

FIG. 2.



Isolation of an abscess of the pulp by a thin wall of calcific matter at a. $\times 15$.

self-reparative process going on in the pulp at the same time. It had succeeded in covering its whole surface with a layer of secondary dentine, except at the apex of the one horn, which shows an abscess-cavity the size of a pin-head. This pulp was engaged in encysting at the time of the extraction, having already thrown up a wall of calcific matter at *a*, thus shutting out the abscess, and it would soon have been in a perfectly healthy and normal condition if the tooth had not been unnecessarily extracted.

These cases are beyond a doubt exceedingly rare, and yet they show us that even an abscessed pulp may, without any interference from without, return to a healthy condition, and they certainly justify the inference that a skilful dental practitioner ought to be able to save a certain percentage even of abscessed pulps. And yet all our experience in the conservative treatment of the dental pulp goes to show that there is very little hope of being able to bring about a permanently healthy state in a pulp in which suppuration has once taken place, and that perhaps with very rare exceptions it is better to devitalize such pulps at once. It is, on the other hand, however, going too far when we advocate the devitalization of pulps which manifest only symptoms of beginning local inflammation, or even of perfectly healthy pulps which have been exposed by accident in excavating.

Hyperæmia and fresh cases of slight local inflammation of the pulp may be reduced with tolerable certainty by a judicious use of oil of cloves, thymol, hydronaphthol, nitrate of silver, etc. The latter has proved a very valuable remedy to me in these cases, applied in form of powder on a pledget of cotton moistened in oil of cloves or carbolic acid and sealed in with oxysulphate of zinc. It may be left in the cavity for twenty-four hours, or even longer where the caries has not approached too near the pulp. In two different cases, where the pulps were protected by only a very thin layer of decalcified dentine, I found some months later that they had suffered a painless death without giving any disturbance whatever. I could not attribute the death with certainty to the action of the nitrate of silver, though it is well to avoid an excess in such cases.

Where a healthy pulp is exposed in excavating, the attempt should always be made to save it. After the cavity has been thoroughly cleaned it should be sterilized by the application of non-irritating antiseptics and the pulp capped immediately, care being

taken that it does not become unnecessarily infected by access of saliva or use of unclean instruments, and that its surface does not become dried by long exposure to the air. As capping material everything should be rejected which does not adapt itself perfectly to the surface of the pulp without the use of the least pressure. I invariably use oxysulphate of zinc, mixing it to a thin paste. With an instrument with which I can easily reach the surface of the pulp I take up a quantity the size of a large pin-head and bring the paste, not the instrument, into contact with the surface of the pulp, when, if it is of the proper consistency, it will flow off the point of the instrument and spread out over the exposure.

If it is deemed desirable a small quantity of finely pulverized thymol may be mixed with the cement in order to secure a slight permanent antiseptic action. I have made use of this method for fifteen years at the Dental Institute of the University of Berlin, and have been surprised to see how seldom it fails, even in the hands of students. Of course, one must work quickly with the oxysulphate; the moment it begins to harden it ceases to flow, and is then absolutely unfit for capping purposes. I find this method better than that of applying the paste by means of a cap, as the latter cannot be adjusted without a certain amount of pressure, and one cannot see what is taking place under the cap. After the pulp has been protected by the first thin layer of the oxysulphate there can be no objection to then applying the cap, but a layer of oxyphosphate serves the purpose better when it is desired to fill immediately with any material requiring much pressure for its insertion. As a rule, I allow a year to intervene between the capping of an exposed pulp and the insertion of the permanent filling.

THE TECHNIQUE OF APPROXIMAL RESTORATIONS WITH GOLD IN POSTERIOR TEETH.¹

BY M. L. RHEIN, M.D., D.D.S., NEW YORK CITY.

PROFESSOR BLACK's articles on operative dentistry, which have appeared at intervals during the last twelve years, have been the theme of many heated dental discussions. The scientific methods of cavity preparation which he has given us and his bold proclamation,

¹ Read before the Academy of Stomatology, Philadelphia, February 24, 1903.

“Extension for prevention,” have acted as a firebrand thrown into a lot of dry timber. The member of the profession whose life is spent day by day, hour by hour, in untiring efforts to preserve man’s dental organs, can never fail to find this subject interesting and inspiring.

“Extension for prevention” is no new doctrine to the older members of the profession in this city. In the short period of life in which Marshall H. Webb honored the city of Philadelphia by the practice of his profession he proclaimed this dogma far and wide. His words, spoken and treasured in print, attest this but feebly, compared to the herculean clinical instruction for which he was so famous. Much of his work remains to-day, a living testimony not only of his great skill, but of his genius in understanding where extension is or is not called for.

It may be as well to say, at the outset, that this is not intended as a plea for indiscriminate extension of cavity lines. On the contrary, it is freely admitted that no question which the operator has to meet is more difficult of correct solution than when and how freely extension should be practised. Its abuse is not our subject; but the wide-spread teaching of the doctrine has brought attention to the details of cavity preparation and gold packing.

For some years past the profession has been menaced with the great danger that the improper use of crowns and gold caps would in time make gold contour operations a lost art. This has been averted by the steadily increasing number of believers in the extension creed.

A careful investigation of methods used at clinics in inserting gold fillings will show to us some marked improvements in cavity preparation during this era. A number of faults have been detected and changes made which have placed cavity preparation on a more scientific basis. This good work has been largely fostered by the disciples of extension.

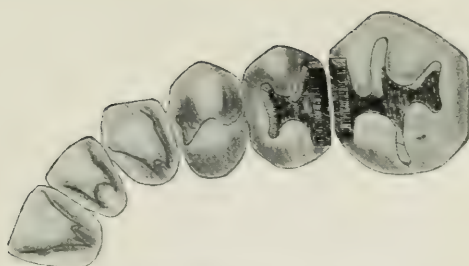
Whether the lines of the cavity are to be appreciably extended or not, has no bearing on the great advantages that are to be gained by discarding what has been found to be faulty, and adopting scientific methods of preparation. There was a time when retaining pits at the cervical borders were abandoned and diminutive holes made which were called starting-points. This lesser evil has passed with the greater, and the starting-points are known no more.

One of the most important changes in preparation has been the

removal of the naturally rounded outlines of the cervical margin, especially at the angles. By means of either fissure or inverted cone burs the cervical wall is made perfectly flat, in order to form a stable foundation for the filling. This leaves a flat surface for the filling to rest upon, and as the operator deviates from this ideal the ability of the filling to withstand the strain of usage will be lessened. The buccal and lingual walls should start at right angles from the flattened surface and run in parallel lines from the flattened cervical seat to the crown of the tooth. Only in small fillings should these bucco-lingual walls be grooved. It must be remembered that all grooves or undercuts in these positions tend to weaken the supporting walls. The sides of these walls should remain, with the exception of the exterior bevelled margin and the interior dovetailed shape, as nearly straight as possible. The real anchorage seat of all fillings of this nature depends on the dovetailed occlusal step cut at right angles into the occlusal surface. (See Fig. 1.) This step, if cut into a non-carious occlusal surface, should be absolutely flat and not be made much thicker than the enamel itself, in order to preserve the strength of the walls. Frequently, however, the crown of the tooth has deep-seated caries as well.

In such cases it is best to fill this cavity separately, only up to the point where the right-angle step would naturally be. Then the approximate filling, when it reaches the proper height, will be packed and united against this flat floor of gold. In all such cases, where the walls are materially weakened, it is essential to guard against the breaking of the tooth or one of the walls. This is accomplished by cutting away a sufficient amount of these walls, so that they will be covered by gold of sufficient thickness to stand the wear of continued usage. A very important part of the operation is the polished bevelling of the enamel margin from the cervical border to the occlusal portion of the tooth; wherever it is feasible this bevel should extend around the outer periphery of all enamel margin. (See Fig. 2.)

Such work is well done by the gem cavity stones, finishing with sand-paper disks. The cavity itself may be prepared in an ideal manner, and yet recurrence of decay commence along the margins, if proper attention is not given to the bevelling of the enamel-rods. (See Fig. 2.) This bevelled surface should vary in size and shape, according to the strength of the walls. All these remarks about



With slight modification from Webb.

FIG. 1.

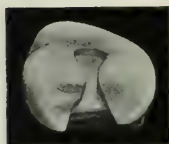


FIG. 2.

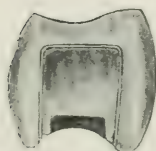
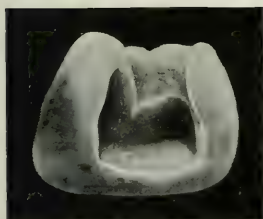


FIG. 3.

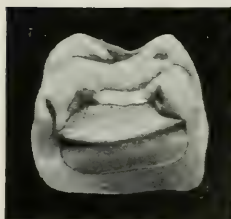


FIG. 4.

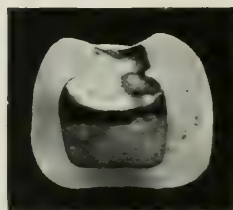
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B



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cavity preparation follow out the laws laid down by Professor Black, and for further detailed information on the subject, as to double steps, stress, etc., the reader is referred to his well-known articles on the subject.

Bearing in mind that all such cavities, after being properly prepared, are left in condition for the easiest introduction of gold, the following question is raised: Has equal progress been made in the methods of impacting the gold in cavities? The careful investigator can only reply in the negative to this inquiry. Method after method has been evolved, manifold forms of gold have been introduced, all done with the intention of enabling the operator to pack gold in a cavity with less expenditure of time and labor. Too frequently this saving in time and labor has been accomplished at the expense of the life of the filling, due to its lack of homogeneous compactness.

It is confidently asserted that gold fillings, at the present day, are not placed in teeth in what may be termed an ideal manner by as great a proportion of operators as in the time of Webb. While it is freely admitted that the most difficult portion of making a gold contour consists in properly shaping and preparing the cavity, it must not be forgotten that the insertion of the gold requires a considerable amount of time and patience and some little skill.

Professor Black, in one of his most recent articles on this subject, devotes considerable space in attributing the recurrence of caries to two causes,—“First, those due to the faulty manipulation of gold in packing, or the failure to make fillings completely water-tight; second, those cases of recurrence of decay from an actual rebeginning of the carious process upon the surface of the enamel, beside the filling which was in itself perfect.” He then proceeds to state how to differentiate between these two causes, and almost takes it for granted that the first cause—leaky fillings due to faulty manipulation—is of minor importance. In fact, all the members of the Black creed write as though all the recurrences of decay that are found are due to insufficient extension.

If all recurrences of caries came under our notice as soon as they occurred, it would be comparatively easy to make a diagnosis of the class to which they belong. As a rule, sufficient time has elapsed to make such differentiation impossible.

It is just as permissible to make the following dogmatic statements. Faulty manipulation is most apt to occur nearest the cer-

vical border. Such faults may be due to various forms of defective manipulation, but in such cases the commencement of the recurrence of caries may be said to begin within twenty-four hours. The slow development of such recurrence will depend on the state of immunity to caries existing at the time. Where comparative immune conditions exist, caries is liable to proceed under the filling in the gingival third, without being detected by average dental examination. When, finally, it manifests itself in no unmistakable form beyond the lines of the original cavity, who dares to state dogmatically that the caries has proceeded from recurrence on adjacent surface to the original cavity or *vice versa*, starting from a defective filling to the undermining and breaking down of the surface adjacent to the filling?

One of the most unfortunate features in the practice of Professor Black's disciples is this: Most of them appear to have adopted methods of inserting gold which tend too readily to produce defective stoppings. In their efforts to save time they have sacrificed the inherent strength of the plug. The old axiom holds as true here as elsewhere. A gold filling is no stronger than its weakest point. The very essence of Webb's success lay in his recognition of this law. What he said so often in society meetings on this subject are as true now as then, and they were true then. Quoting from the pages he wrote when he knew he was dying, he said, "Gold in the form of cylinders or pellets, and when in a non-cohesive condition, may be used so as to prevent decay in some so-called simple cases; but when really fine or first-class operations are to be performed, foil ought to be so carefully prepared, introduced, and solidified that the operator can be positive that each piece has been firmly anchored in place or has adhered to that already in position, and, being certain of this, the whole filling can be made solid and uniform in density, and the organ operated upon fully restored to usefulness."

There is no intention of denying the fact that simple cavities can be sealed and preserved by the use of non-cohesive gold used alone and in combination with cohesive gold. Where, however, the greatest resistance possible is demanded against the one hundred to three hundred pounds of pressure used in mastication, it is reasonable to suppose that the more solid the stopping, the greater its strength and durability.

In contour restorations of the posterior teeth, the greatest resist-

ing power possible of attainment is always demanded. In writing on this subject, Professor Black, referring to the greater amount of strain a natural tooth will bear than any filling, says that "all that gold will bear is all that it will bear under a crushing strain. The weakest portion will give first, whether it be the cervical or occlusal, and either will destroy the filling." In another place he says, where a very heavy filling is to be supported, "platinum gold" packed in the occlusal step is, on account of its hardness, much more durable. If the extra hardness of "platinum gold" will give a better plane of resistance to the crushing strain of mastication, the same line of reasoning will hold good in the comparison of cohesive gold fillings with those made up of a combination of cohesive and non-cohesive foil.

The question resolves itself into the amount of crushing strain a filling will bear that is made up from beginning to end of pieces of cohesive gold-foil solidly packed together, so that the finished work is one solid homogeneous mass of gold, the molecules of which are as inseparable as would be found in an ingot of melted gold. Compare this with a filling composed of non-cohesive and cohesive foil held together by the mechanical locking of the various pieces of gold, which can be readily separated by means of sufficient pressure, and the superiority of the former filling in its ability to withstand the crushing strain of mastication is at once apparent.

Having determined, therefore, that the completed filling should be one solid plug, your attention is invited to one method of inserting the same. That recurrence of decay at the cervical border destroys the usefulness of most gold fillings has long been an admitted fact. It is here at the beginning of the filling the operator must exercise the greatest care. It is understood that a solid flat floor has been prepared free from any checks or imperfections of the enamel margins. The axial walls, though perpendicularly parallel, are slightly dovetailed towards the pulpal wall, so that as the filling advances in size it is more securely locked into position by the prepared shape of the cavity.

This locking embrasure of the cavity should be formed by a gradual sloping of the wall of the dentine from the enamel margin towards the pulpal wall. It should always be free from any narrow or deep undercuts, which not only weaken the walls, but tend materially to retard the speedy packing of the gold-foil. The cavity is now washed with a few drops of ten per cent. solution of formalin

and then thoroughly dried. A very small piece of one of the plastic forms of gold, like "moss fibre" or "De Trey's" is placed on the electric gold annealer. A small amount of oxyphosphate of zinc having been thoroughly mixed to a thick creamy consistency, an amount generally equal to the size of the head of a pin is taken on the point of a broach and carefully placed along the inner half of the floor, care being taken to keep the margins entirely free from any cement. The small piece of annealed plastic gold is now carefully laid in position over the cement. With a small round burnisher (kept thoroughly polished) the gold is gently and evenly worked into the film of cement. It requires a little practice to be able to properly burnish this small starting-piece of gold into proper position.

The pressure on the gold must be extremely delicate, evenly divided, and always towards the pulpal wall. No cement should ever appear beyond the gold towards the enamel margins, nor on the upper surface of the gold, nor come into contact with the burnisher. The cavity is now ready for the strip of freshly annealed gold-foil a little narrower than the floor of the cavity. This is at once malleted against the gold starting-point, which is cemented fast to the dentinal floor. It is generally preferable to wait a few moments for the small amount of cement to harden, and this time can be utilized by cutting the gold of desired thicknesses, from No. 30 to No. 60, into strips of such width as can be most satisfactorily used.

A capable assistant employed to place the proper strips of gold on the electric annealer, and feed the same, will be found invaluable in saving time for the operator. The floor of the cavity is now covered evenly by gold-foil malleted and condensed solidly against the flat surface, care being taken that a piece of gold should always intervene between the plugger and the tooth-substance.

The filling is now brought in an even manner from the bottom upward, advancing no part of the gold beyond another part. This requisite evenness of surface is best accomplished by wiping the gold with the plugger, hammering away from side to side. To accomplish this in the most satisfactory manner, it is essential that the blows should be delivered in very rapid rotation, from two to four thousand per minute. There should be no unevenness of power in the blow and it should always be under the perfect control of the operator.

The ideal mallet for twenty-five years has been the electro-magnetic mallet invented by W. G. A. Bonwill and improved by Marshall H. Webb, and more recently by George L. Harrison. Webb, in speaking of the mallet, says, "The packing instrument should be touched upon or placed (not pressed) against the gold in a manner similar to that of making dots on paper with a pencil. Light, medium, or hard blows can be made without changing the adjustment of the instrument, as fine or heavy lines are made on paper with a pen. When the electro-magnetic mallet is operated and guided as here indicated, gold can be carried against and over the margins (even frail edges) of enamel without fracturing them." In speaking of its superiority, he says, "This is true of the work of the electro-magnetic mallet, because, to expel the air from between the particles of foil and place them in absolute contact in every given piece or body of gold, a certain number of blows of given force are necessary; and to thus go over the whole of each piece being impacted by any other known method would require the expenditure of more time and greater effort. That gold be made compact it is not so desirable that a heavy blow simply be struck as it is necessary that rapid, regular, and only moderately heavy blows be skilfully given to each piece of foil. By no other method can this be done so well and so perfectly as with the electro-magnetic mallet."

These words remain as true to-day as when written by that gifted operator over twenty years ago. Every one who knew Webb realized how thoroughly he believed in the electro-magnetic mallet, so much so that it seemed a part of him. It might almost be said that he died in the cause of propagating the benefits that would ensue from the use of this instrument.

In his time it was necessary to depend on crude forms of inefficient batteries for power which interfered materially with the general adoption of the mallet. The adjustments of the instrument were easily disturbed, and required a thorough comprehension of its construction to readjust.

Recently, Mr. Harrison, of the S. S. White Company, has succeeded in improving the mallet to such an extent that all the former objections to the instrument's getting out of order and not working properly have been removed. The improvements in batteries and the ability to do without their use entirely has removed the most cogent opposition to the adoption of this instrument.

That the improved electro-magnetic mallet is not better known to-day is due to the fact that we have no Webb to cry its praises from the Atlantic to the Pacific. It is generally very unsatisfactory to attempt to change methods that have produced good work for a long number of years. To the young men, however, who are striving to produce gold restorations that will be time enduring, the instrument is recommended as possessing qualifications superior to that of any other form. Notwithstanding the disadvantages attending the use of the mallet twenty years ago, there are many of our best operators to whom it has always been their chief mainstay.

I wrote to three exceptionally good operators, who have used the mallet for over twenty-two years, and their replies are as enthusiastic in its favor to-day as they have always been. It affords me great pleasure to read what Dr. R. H. Hofheinz, President of the New York State Dental Society, has written to me on this subject:

"The question regarding the electro-magnetic mallet must be considered from two stand-points,—first, its advantages; second, its disadvantages. Among the disadvantages I should count, first, the necessity of an assistant. I cannot imagine myself using this instrument without the help of a skilled assistant; second, strictly cohesive gold in all cavities from beginning to the end of the operation; third, its restricted use to fair and large sized and accessible cavities; fourth, the disagreeable noise to some patients.

"The advantages are, first, rapidity of work; second, uniform condensation of the gold; third, the secure condensation of gold against the margins of the cavity such as no other condensing methods afford; fourth, the benign response from a tender peridental membrane. When all other condensing methods, including hand-pressure, produce pain upon the peridental membrane (whatever may have been the cause of its nervous hypersusceptibility), the stroke of the electric mallet will be borne by that vascular tissue without pain; fifth, there are some people to whom the continuous noise is far preferable to that of other mallets; sixth, I may add that the frailest teeth are never filled with more safety than by the use of the electric mallet; seventh, no mallet is less apt to produce cleavage of the enamel."

Dr. W. C. Wendel and Dr. Charles Southwell, of Milwaukee, two of my classmates, have written with the same amount of enthusiasm. Dr. Southwell, among other things, writes: "The patient

in the chair and the tooth in the socket cannot be disturbed by any method that deals gently with frail walls. The introduction of the hand-mallet and automatic mallet as prime methods by the colleges is a source of untold and unnecessary mischief. They should be taught as secondary methods only, useful in the event of a break in the equipment of the prime methods."

With the aid of the electro-magnetic mallet it is possible to make the largest of restorations without unnecessarily tiring the patient. The sittings can be made as short as may be necessary for the well-being of any individual. On account of its perfection of condensing properties the operation can be stopped at any point and gutta-percha inserted temporarily. Upon the return of the patient after the rubber dam has been applied, the superficial layer of gold has only to be burred away, and freshly annealed foil can be at once added with fully as perfect cohesion as if the filling had just been commenced. The ability to do this is the one great test of the proper condensation of gold by any form of instrument. In fact, the best results are generally attained where the lower third or half of the filling is inserted at one sitting and the operation completed at a later time.

In the majority of contour restorations the surfaces of both teeth are involved. In such cases it is most advantageous to fill the gingival third of both teeth at the same sitting. After the filling has been well started a matrix may often be used to advantage. This should serve merely as a convenience in shaping and in no wise be depended upon as a support to the filling. On this account, wherever a matrix is used it should be occasionally removed and the filling carefully tested in order to determine that it is held properly in place by its own walls and on its own foundation. It is an important essential of a satisfactory contour that all of the exposed surface of the gold should be so carefully finished as to resemble polished enamel. To no portion of the filling is this ideal finish more important than at the cervical margin. Care must be taken that all overhanging bits of gold should be removed and the polishing done without in any way defacing or marring the enamel margins.

It is questionable whether the proper finishing of this gingival third is not a more influential prophylactic than excessive extension would be without such a perfect finish. Consequently it must be conceded that this ideal finishing of gold is demanded if the filling

is expected to be a permanent one. When the filling has been completed with its proper contact points, it is difficult and sometimes impossible to do this in the manner described. Consequently the polishing of the gingival third or half should be done as soon as the filling has been built up to the point where the convex slope of contour has its beginning. (See Fig 3.) Done at this time, the operator has all the advantage of plenty of room and space, and is not worried by any fear of destroying the contour shape.

It is generally impossible to do this finishing thoroughly without serious injury to the rubber dam, and the day's work may just as well stop at this point. Pink base-plate gutta-percha carefully packed in the remaining portion of the cavities will tend towards giving a better separation at the next sitting. Then, after the rubber dam has been applied, a fixed wedge of some character is used at the cervix in order to maintain sufficient separation. With a sharp bur the last film of gold-foil is removed and freshly annealed gold-foil is at once malleted successfully against the freshened gold surface. If the filling is large enough to demand it, the operation may in this manner be divided into any number of sittings and still become at the end one solid homogeneous plug of gold inseparable at any point. This ability to divide the insertion of the gold into any number of short sittings appears not to be generally understood. It is a great boon to many patients who earnestly desire the most stable operation but who dread lengthy sittings. The remainder of the filling is now built up in the same even manner, carefully watching the reproduction in gold of the convex contact points.

Matrices can be used here to good advantage. They should be removed frequently and replaced with thinner ones, until the very thinnest is used at the place mapped out for the marble-like contact points. These contact points can be made natural in most cases. There are, however, some cases of irregular teeth when the interproximal space is exaggerated, and here the ideal contact points must be abandoned to such shaped contact points as each irregular case may demand.

When the packing of the gold has been completed, the teeth should be slightly wedged apart, and the contoured portion of the filling finished with the same care as was given to the finishing of the gingival portion. (See Fig. 4.) For this purpose fine chisels and files, supplemented by sand-paper strips and disks, are most

efficacious. The final polishing can then be given with very fine cuttle-fish strips and disks which have been covered by a thin coating of vaseline. The occlusal portion of the filling is best finished by means of properly shaped plug-finishing burs, which by being kept wet are often sufficient to give the final finished polished surface. If not, this can be supplemented by fine pumice and wooden or moosehide points. The separator is now removed, the teeth come tightly together at their golden contact points, and there stands revealed the polished golden counterpart of the lost tooth-substance.

NOTE.—The sketch of upper teeth is taken from Webb's book, and distinctly illustrates how thoroughly he believed in extension. The sketch has been slightly modified in the way of removing the cervico-buccal and cervico-lingual curve and replacing same with straight walls.

THE REMOVABLE BRIDGE AS A CONSERVATOR OF TEETH.¹

BY DR. A. C. EGLIN, PHILADELPHIA.

IN the broad field of bridge-work it is my intention to speak of that specific quality in removable work, which seems to have received the least attention from writers on the subject, but which is in reality one of its chief advantages,—namely, conservation.

In all cases where bridge-work is indicated the removable form can be used, and the facility with which it can be cleansed or repaired is generally recognized. There, as a rule, the credit given the class of work ends, but it should be borne in mind how thoroughly, when the bridge is removed, adjacent teeth can be cleansed, or, in case of necessity, the ease with which the surface of the tooth approximating the piece can be filled. Any one who has inserted a gold filling in the proximating side of the tooth next to a fixed bridge can speak feelingly of the difficulties attending such an operation.

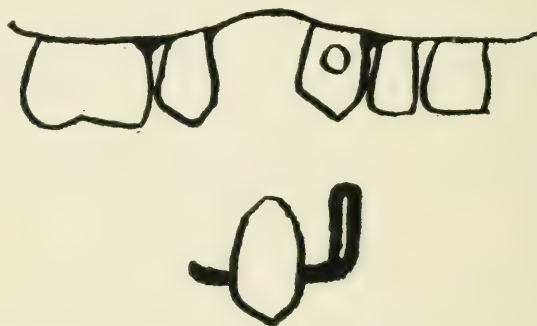
The possibilities of the tube and split pin attachment as a con-

¹ Read before the Academy of Stomatology, Philadelphia, February 24, 1903.

servator of the natural crown are well worth your careful consideration.

Not infrequently we are called upon to supply the loss of a single anterior tooth. The particular case which I shall describe is the replacing of the first superior bicuspid. A most artistic dummy can be adjusted by opening into the cuspid root from the basilar ridge and enlarging the canal to receive a platinum tube. Into this tube is carefully fitted a split pin, bent in such a manner that it can readily be soldered to the bicuspid dummy. As a further support, a spur is soldered to the piece which rests in a gold filling in the sulcus of the second bicuspid. At this point my meaning may be made clearer by a rough sketch of the piece. (Fig. 1.)

FIG. 1.



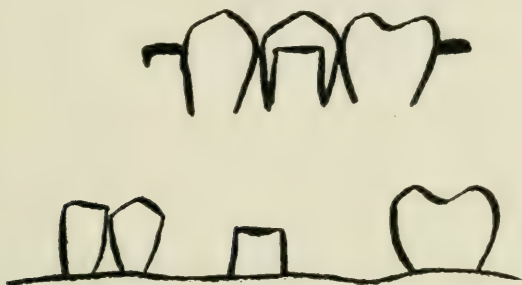
The amputation of natural crowns of teeth, under whatever circumstances, gives the operator twinges of conscience, to say nothing of the feelings of the patient, who cannot be expected to appreciate why good sound teeth should be so mutilated. By using the method just described, any of the anterior teeth may be restored, and the operator will preserve his self-respect and give the patient a better crown, because it is the natural one, than a Richmond constructed with the greatest skill. Were a fixed Richmond crown, with dummy attached, made in such a case as this, the piece would, apart from the loss to the patient of the natural crown, still have the disadvantage of harboring food-stuffs between the dummy and the adjoining tooth, which in time, through impinging on the gum at the cervical margin, might cause an irritation of the cementum that in many cases could be treated only by the removal of the bridge.

A little bridge of three teeth made two years ago, in which only

one root was crowned, demonstrates still further, by using another variation of the removable type, the conservation made possible by this method.

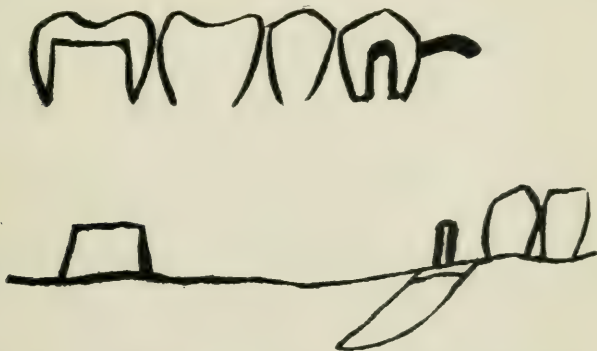
The case in point was to supply the loss of the first bicuspid and first molar on the left side of the inferior maxilla. The second bicuspid was crowned with double or telescoping caps, the outer cap having the first bicuspid and molar dummies soldered to it. As in the former case, spurs rested in gold fillings in the cuspid and second molar. With a fixed piece, to be practical, it would have been necessary to crown at least two teeth. (Fig. 2.)

FIG. 2.



The last case to be described presented the conditions seen in the drawing. The space to be bridged was between the second lower right molar and the first bicuspid root, the crown of which had

FIG. 3.



been lost for some time. The peculiar difficulty lay in the bicuspid root, which inclined towards the second molar at an angle of almost forty-five degrees from the perpendicular. To make use of this

root, the ordinary attachment of a tube and split pin could not have been used, because the pin has always to be parallel, or nearly so, to the other abutment. To get over this trouble, it was necessary to reverse the usual order and solder the tube in the bridge and attach the split pin to the floor of the cap covering the root. To avoid undue strain upon the root, which owing to its position was none too strong, a heavy bar of iridio-platinum wire was soldered to the bridge and allowed to rest on the cuspid. (Fig. 3.)

Fixed work in this case would have meant the loss of the natural crown of the cuspid and also the extraction of the bicuspid root.

In a small way the fact has been impressed upon me that there are numerous cases where teeth may be saved by using the removable form of bridge. The natural crown is better than any artificial substitute which we can make, so let us not ruthlessly cut off crowns that may be made to serve the requirements of the case without amputation.

POINTS OF INTEREST IN A TWENTY YEARS' PRACTICE.¹

BY NED A. STANLEY, D.M.D., NEW BEDFORD, MASS.

MR. PRESIDENT AND BROTHER ALUMNI,—The subject upon which I am to speak for a few minutes was selected by the committee, of which I believe I am a member, but was not even consulted in the matter. The request, or rather demand, was for a fifteen-minute paper on "Points of Interest in a Twenty Years' Practice."

I am not sure from the subject just what the committee expect, but take it that a few practical points or suggestions from my eighteen years' practice, to be exact, would be somewhat in the line they may have had in mind; but if you do not get anything worth listening to, just blame the committee,—*i.e.*, the other two members.

I think it was Huxley who said, after he had given his first

¹ Read before the Harvard Dental Alumni Association, Boston, Mass., Monday, June 22, 1903.

lecture, supposed to occupy one hour, that in half an hour's time he had told everything he knew, and had done nothing but repeat himself ever since. Reasoning from analogy, I should exhaust myself in seven and one-half minutes, and never expect to be called upon again.

However, the subject is so elastic and the length of tether, alas! so generous, that even for one who lacks the power of concentration he cannot fail to carelessly compile a few desultory remarks.

I feel like trying to say something that may be of practical aid to the young practitioner and those about to engage in practice, and yet I shrink somewhat from the undertaking, knowing that the best of instruction and advice has been received by every alumnus, and from those more competent to give.

Happy is the man who has a profession in these unsettled and uncertain days in the business world. A man's personal skill is his own, and nothing but death or accident should deprive him from exercising it. In choosing dentistry for your life-work, bear in mind that you have selected one of the great professions, as well as one of the most exacting, in which it should be your aim to become representative men. I think the feeling often comes in the experience of young professional men that they have chosen unwisely and might have done better at something else. Do not let such thoughts affect you, for they will pass away, and you will come to see, and be in the right relation to your profession.

Newton said he was only picking up an occasional pebble on the shore with the vast expanse of the sea beyond. A touch of agnosticism, which simply means I do not know, is a good thing for all of us, for things in this world move rapidly and without intermission, and the dental profession is one of them.

The possibilities it embraces are bringing men of broad and liberal education to its fold every day. To be a representative man in such a profession means much to any practitioner.

One of the first things in which the young dentist can show his good taste is his office appointments. Upon entering your office the first thing the eye will observe is how it is furnished. Here is where by showing good taste you can, unconsciously, favorably impress the would-be patient before seeing him. Especially is this true in the selection of pictures.

When your professional advice is sought, let one of the first

given be, how very essential to the proper care of the mouth and teeth is cleanliness, and never shrink from or shirk this feature of your work, which is, I am afraid, too often the case.

Habits formed early become more readily a part of one's self than those acquired later in life. In beginning practice it should be every man's study how to save physical and nervous force. The man with a large pressing practice is kept at high tension, and every means should be employed enabling us to do our work as easily as possible.

One of the greatest of these is the operating-stool. You can accustom yourself to do nearly everything in an easy, restful position to yourself. For ten years and upward I gave little or no thought to the matter, but there came a time when to stand all day was a different story; and not until I visited Dr. Gillett's office did I appreciate the extent of the use of the operating-stool, everything conforming to the height of a stool perfectly comfortable to sit upon, and everything within easy reaching distance.

I strongly urge this upon your consideration. Do not wait ten years; be wiser than I was and adopt its use at the start. School yourself to take things easily and with as little worry as possible. This advice I can give, but never could follow very well. We know the reason the earth is not hit by travelling meteors is because when they come in contact with the atmosphere the friction generates sufficient heat to destroy them.

Now, some people have the faculty of surrounding themselves with an atmosphere which acts like a shield against troublesome and annoying things, while others less fortunate are being continually pelted. Everything disagreeable seems to strike them in huge lumps, and with the close of each day much good nervous energy has been wasted which might have been put to better use.

As in the days of Hamilton and Jefferson, when to bring order out of chaos it was necessary to have such powerful characters diametrically opposed to each other, so in a lesser sense we have the radical and the conservative practitioner. By all means be guided by the latter.

It has been my opportunity to see much of the work done by one of the most conscientious practitioners and teachers of a generation since, but an extremist of the worst type. New theories were adopted and put into practice with the most disastrous results. Many years ago it was Arthur's separation, the ruthless sacrifice

of the first molar by some operators. The adoption of methods and theories which seem plausible but are unsound is sure to breed mischief. As Shylock says to the Christian, "The villany you teach me I will execute, and it shall go hard but I will better the instruction." We can aid and often improve the conditions under which nature does her work, but the man who takes it upon himself to improve upon her general plan is presuming too much.

In recent times, and from which less disastrous results are likely to follow, we have extension for prevention, which I believe in, but hardly to the extent of some of its exponents. The individual case in point and the sound discriminating judgment of the operator must determine the extent of the cutting necessary. Good judgment is the most essential quality demanded by the dentist, for we must decide problems that ten, fifteen, twenty years later reflect upon that judgment. Then, second only, is the marvellously skilled hand with which to carry out what that judgment tells us.

And we all will meet with failures quite often enough. If it were not for our failures progress would be of uncertain growth. Holmes says the man of "facts" lives in a one-story house. Our profession calls for, nay, demands, a resourceful and creative mind, and if we are lacking in this we cannot succeed by doing things as some one tells us.

In the large percentage of cases greater skill is required than in surgery. To be sure, we do not share the responsibility of the surgeon, nor is nature the great healer with us as with him. The responsibility of most of our operations rests with us.

In orthodontia both judgment and skill of a high order are required; and most gratifying it is to know that the students of this school are being taught in this most important branch. Something not even dreamed of in our days of school work. It should form a very important feature in every man's practice. Aside from appearances we all know that teeth in normal position have a great advantage over those in malocclusion.

One other point I wish to touch upon briefly, for in a paper of this nature I should not think of going into technique or detail, and that is, attend society meetings. There is where we can be of help to each other. Unless a man takes interest enough in his profession to meet his professional brother he is going to vegetate; the circle in which he travels will be a small one. We must progress till the end.

Many years ago we had as guest at one of our alumni dinners the late Bishop Brooks. In the course of his remarks, I remember, he spoke of the usefulness and help we were to each other, that the service we rendered to others enabled them to do their work better and with greater comfort.

To-day the torch is in our hands to carry, and let those who follow find that the wave of progress has left its mark higher than before. Let each one of us so work and live that the community shall be the better for our having lived and labored therein.

THE INFLUENCE OF DISEASES OF THE AIR-PASSAGES ON THE TEETH.¹

BY A. G. MINSHALL, M.D., NORTHAMPTON, MASS.

MR. CHAIRMAN AND GENTLEMEN,—The time has undoubtedly arrived when it is appreciated by all that dental science stands in such close relationship to the other branches of the great art of scientific medicine that the work of the dentist and that of the physician have innumerable points of contact and common interest to both professions. The American Medical Association for some sixteen years has had a Section on Oral and Dental Surgery and Stomatology, under the efficient guidance of Dr. E. S. Talbot, of Chicago, and at the last meeting of that body it was recognized and approved that reputable members of your profession shall be eligible for associate membership in the Association, to the mutual benefit of us all. These facts enable me the more readily to accept the invitation to address you on one of the many problems which confront us in common in our daily experience.

You all have frequently been called upon to rectify the deformities of the teeth, and doubtless have studied the causation of these defects. I propose to briefly consider some of these causes as they appear to those of us interested in diseases of the upper air-passages.

By far the most important and common of these factors is nasal obstruction and consequent mouth-breathing, and the age at

¹ Read before the Massachusetts Dental Society Meeting, held June 3 and 4, 1903, Boston, Mass.

which it is most apt to appear is just previous to the eruption of the permanent teeth. There may be obstruction in any part of the air-passages leading from the nostrils to the beginning of the œsophagus, but the condition most common at the period named is that known as adenoids, an overgrowth of the lymphoid tissue normally present at the upper part of the pharynx, the so-called pharyngeal tonsil; with or without this enlargement there may be a similar hypertrophy of the faucial or true tonsils. Less commonly in children, but more so in adults, we meet with the spongy swelling of the nasal mucous membranes, either general or localized, in the form of polypoid excrescences. The chief interest to the dentist lies, of course, in the results produced by these conditions during the periods of life when the jaw and teeth are undergoing their development and growth. In studying the development of the bones which enter into the formation of the hard palate in particular, we find that although the ossification of the upper jaw is not thoroughly understood, it is an undoubted fact that the palatal process, with the alveolus of the four incisors, ossifies quite late in comparison to the remainder, and in consequence these teeth are the most frequently and severely displaced.

If a child is a mouth-breather from any reason, jaw and tooth deformities are likely to arise from several causes: first, it has been demonstrated experimentally and otherwise that there is a general arrest of the proper growth in all the facial bones, and especially in those forming the walls of the nasal chambers; young animals with one nostril plugged present marked atrophy, or, rather, deficient development of the structures on that side; secondly, deformity is brought about by the yielding of the yet plastic palatal arch to the pressure of the air forcibly inspired through the mouth. If the mouth-breathing is only present before the eruption of the permanent teeth, the palate may become dome-shaped, leading to an approximation of the alveolar borders, so as to form an elliptical curve; the whole growth of the jaw will be more or less retarded, but the teeth will be in normal position if nasal respiration is restored. If, however, the cause continues during the second dentition, the palate becomes even more elevated, forming a Gothic arch, the anterior part of the alveolus inclines forward, and the jaw assumes a V-shape. These changes produce the following alterations in the position of the teeth: the central incisors are rotated so that their lingual surfaces look towards one

another and are tilted forward, while the lateral incisors and frequently the premolars are pushed inward, the molars turning outward. As the upper and lower jaws do not develop at the same rate, dental articulation becomes altogether interfered with.

In studying the actual physical cause of these malpositions, we find that the prime factor in the case is the upward extension of the palatal arch, which brings the sides together, so that, as the regular number of teeth begin to demand room, they can only find it forward. The molars seem to suffer least, possibly because they fulfil the most important function of grinding. The incisors and canines suffer most because there is nothing to prevent them from being forced out in front by the lateral pressure.

I have brought no specimens to exhibit, knowing that every dental office contains casts which show all these conditions, but I do not think that there is so general an appreciation of them by your profession as there should be in reference to a large field of your work,—the straightening of the front teeth in children, which it is useless to attempt with success so long as the cause of the malformation is still active. Not only does mouth-breathing affect the position of the teeth, but it impairs their nutrition by its bad effects on the secretions of the mouth and the digestion in general, leading to premature softening and caries.

Let us now briefly consider the causes and results of mouth-breathing after puberty. In the great majority of cases this will be found to be due to swelling of the mucous membrane lining the nasal passages, and to the secondary deformities which have been caused by the presence of adenoids at an earlier period, most commonly a deflection of the septum which has been distorted by the upward pressure of the excessively arched palate. From this time onward we cannot, of course, expect to do much in the way of restoring the normal shape of the jaw, but we can, by restoring nasal respiration, improve the general aspect of the face and the condition of tooth vitality, both by rendering the oral cavity less septic and by raising the tone of the general health. So much for the effect of mouth-breathing. There are some other conditions which may cause the dentist trouble in which the fault arises from the nasal passages, particularly some obstinate neuralgias arising from pressure on the nerve-endings within the nose from new growths, enlarged turbinated bones, and similar sources of irritation. It is advisable that the dentist should be on the lookout for

these difficulties, so that he may save himself much fruitless and tedious work, and I will briefly run over a few points of value for diagnosis. First, as to children with adenoids. You may or may not have mouth-breathing when you see the case in your office, but the high-arched palate, the broadened bridge to the nose, leading to the appearance known as "frog-face," and a catarrhal discharge from the nostrils are common signs; in other cases you will see the well-marked mouth-breather, with the "rabbit-mouth," upper lip projected forward, and jaw dropped, a stupid expression of face, and sometimes a dulness of hearing. In older people you may suspect nasal irritation from a discharge from the passages, with redness or soreness around the nostrils, a nervous sniffing at intervals, and a tendency towards weakness and redness of the eyes.

I hope that these few hints may be of service to your practice; on many other occasions, when I have come into somewhat intimate contact with members of your profession, I found myself under certain conditions of more or less restraint, not to say actual discomfort. I am thankful to say that this time I feel more at my ease, so much so that I propose to close my mouth when I am ready so to do, as is now the case.

PROFESSIONAL RESPONSIBILITY.¹

BY A. E. BALDWIN, M.D., D.D.S., LL.B., CHICAGO, ILL.

MR. CHAIRMAN AND GENTLEMEN,—In coming before you on this occasion with this subject for a basis of a paper, I perhaps should premise it by stating that, while this is a hackneyed subject, it is one on which we ought to devote a great deal of thought. We stand before the public and the general profession as the guardians of the entrance to the alimentary canal, and these responsibilities laid upon us determine many things in connection with the general health of our patrons.

These responsibilities begin in our advising our patrons as to the care and carefulness with which the temporary teeth of the

¹ Abstract of a paper read before the American Medical Association, Section on Stomatology, New Orleans, May 5 to 8, 1903.

little ones should be protected, as well as advising as to the care of the permanent teeth which obtain in later years.

In a former paper, or rather papers, read before this and other gatherings, the writer has urged upon the general profession, as well as our special department, the care which should be bestowed upon the deciduous teeth. It doubtless is overlooked by many of the general practitioners, and, judging from the writer's observation, by even many in our special field, that the teeth of the growing child should be kept more carefully even than the teeth of the adult. A reason apparent to all is that while in adult life nutrition only to make up for the waste of tissues is necessary, in the growing child there are many reasons why added nutrition should be obtained, chief among which may be mentioned that the waste tissues which must be made up are fully as large in proportion as in the adult, while with the child there is a rapid development of the general system, requiring much additional nutriment. Indirectly, there are many other reasons, among which are these: A child has a vigorous and almost unlimited appetite; if these deciduous molar teeth are allowed to become sensitive, painful, or lost, the mastication of the child is necessarily hampered, and it is an axiom that a child will never masticate food if by so doing pain is caused. They very early in life learn that despicable habit of "bolting" their food with but little or no mastication, if mastication is in any way disagreeable, thus fixing upon them a habit for life which is conducive to many of the ills of indigestion and malnutrition. A still further reason is the fact that all teeth in the mouth, at all ages, have a tendency to move towards the median line of the mouth; hence if one of these deciduous teeth is extracted before its successor is ready to erupt, the teeth behind will move towards the front, thus preventing the proper eruption and proper development and expansion of the arch, and causing the coming in of the teeth in abnormal positions, and also creating irregularity and its subsequent ills.

The writer has always urged upon the general profession and our special department that exceeding care should be given to the deciduous molar teeth, and advising our patrons to urge upon the child a thorough use of the brush, and frequent inspections of these teeth, and that at the least suspicion of decay they should be given immediate professional attention, thus preserving them in a healthful condition, so that mastication can be performed fully and that

the ills resulting from "bolting" of food may not invade the stomach of the little patient, bringing upon it all the ills of indigestion, characterized frequently by the recognition of a very nervous little one whose only trouble, probably, is dyspepsia caused by lack of the above attentions. The writer would urge upon our specialty that most careful attention be given to these teeth until the time for them to be replaced by the permanent bicuspid, as well as the very great care that should be observed in attention to the first permanent molar, which is erupted at about the sixth year of age, and the molars which are subsequently erupted posteriorly thereto.

This first permanent molar spoken of we all recognize as the abutment of the arch, and from its location, position, size, and attachments, is the most important tooth of the mouth to be preserved at this or any subsequent period. The loss of this tooth, or lack of attention thereto, as well as the lack of care of the deciduous molars, in the writer's belief produces most of the cases of irregularities and deformities of the lower part of the face, nature having evidently intended that the lower part of the face should be developed and expansion thereto attended by the gradual wedging in and pushing apart of the alveolar process by the eruption of the larger teeth of the permanent set.

The writer would also condemn the custom illustrated by the following experience which lately came to him. A professional gentleman of a neighboring city, whose record for general professional standing is high, had a patient who had been under his care for many years. The family had lately removed to our city, and this patient fell under the writer's professional care. Upon calling his attention to many small cavities in the teeth, he explained that his former attendant had said that he knew there were many small cavities, but that it would be better to wait and fill them later. This, to the writer's mind, is one of the greatest of fallacies, and one which obtains more largely than is generally admitted. The writer's belief is that whenever we have an opportunity to examine a patient's mouth, we should give it a most rigid, careful, and thorough inspection, calling the patient's attention to all of the defects which can be found by such careful inspection, and urging upon them the importance of early attention thereto. Especially would he suggest that if any teeth are left unattended, they should be those which have large cavities therein; in other words, he

would urge that if any teeth are given attention by the patient, the ones attended to should be at least those which have the small cavities, thus keeping them from getting bad. A common expression of the writer's to such patients is as follows: "If for any reason you wish only two or three teeth filled, and those which need it the most, the writer would immediately, after careful inspection, fill the three teeth which had the smallest observable points of decay, thus preserving those teeth from becoming bad, and the very bad ones would only get a little worse." This will illustrate the position of the writer perhaps as well as could be otherwise expressed.

His observation has led him to believe that many of our specialty do not recognize the importance of thus acting. In fact, the writer's attention has been called, by several men of prominence, to the fact that by so doing one gets the name of being a high-priced dentist, and is thus marked for being shunned, when, as a matter of fact, such practice, while it causes much more work to be done at the time, saves a great amount of work in subsequent sittings of the same patient, as observed in a practice extending over a large number of years.

The writer believes that we have large responsibilities also in careful observation of the relations which are borne by the teeth, their eruption, care or lack of care upon the general health of the patient, as well as reflex disturbances which may be brought about by this irritation being reflected and observed in other of the special organs of the head. Cases could be cited which would illustrate this, and the writer thinks that this matter is generally accepted as true by the profession at large, but that sufficient care and thoroughness is not observed in a general way as to the minute observations of this rule in general practice.

Another responsibility which we face is that of supplying a masticating apparatus when the natural teeth and roots, or at least many of them, have been lost. Crown- and bridge-work may be made most useful as a conserver or restorer of health when a lack of mastication has caused disordered digestion and the accompanying ills, and yet a note of warning should be sounded that bridge-work or crowns may, by improper adjustment, be made to cause the very ills which they were intended to rectify. Very great care and thoughtfulness must be bestowed upon bridge-work and crowns to see that the articulation is made natural, and that the

force of mastication may be upon the lines of natural resistance which would have obtained had the natural teeth not been lost. The writer has seen many bridges which were absolutely useless in themselves, and which have caused the loss of many of the abutments thereto, thus making the last condition of the patient worse than the first. Our effort should always be to advise and recommend those things which we feel assured will be for the permanent welfare of the patient, never allowing ourselves to be misled by any suggestion of his, or any wish to have cheap or over-expensive work done, if in our belief such work is unwarranted for permanent results.

Reports of Society Meetings.

AMERICAN MEDICAL ASSOCIATION, SECTION ON STOMATOLOGY.

THE meetings of the Section on Stomatology were held in the Touro Synagogue, Carondelet Street, near St. Joseph Street, New Orleans, May 5 to 8, 1903.

FIRST SESSION.

The meeting was called to order at 2.25 P.M. by the Chairman, Dr. M. L. Rhein, New York. The secretary, Dr. Eugene S. Talbot of Chicago, reported as follows:

The programme of the Section is published in the general programme of the American Medical Association. We are unfortunate in some respects in regard to this programme. I had spent a great deal of time in trying to get out one which would be superior to anything heretofore produced in this direction, and I think we have an excellent one. Each of the authors invited by me to present papers was asked to bring out a certain line of thought; and, unfortunately, some of these people, from one cause or another are unable to be with us,—in two cases on account of sickness, in two cases on account of legislation concerning dental laws, and some have gone to the International Medical Congress in Madrid. I have nearly all the papers with me, and I would make a motion

that this programme as it is be adopted as a whole. Seconded and carried.

I will make another motion, that as many of the papers be read as possible of those who are not present. Seconded and carried.

I would also move that Dr. W. E. Walker, of New Orleans, be placed upon the Executive Committee to fill the place of Dr. Andrews, of Cambridge. Seconded and carried. An effort was made to have Dr. Gilmer accept membership in the Executive Committee, but he asked that his name be withdrawn. Dr. M. H. Fletcher, of Cincinnati, was then reappointed.

The Chairman, Dr. M. L. Rhein, of New York, then read his Address.

(For President Rhein's Address, see page 449.)

DISCUSSION.

Dr. M. H. Fletcher, Cincinnati.—The subject presented to us lies near to my heart in the practice of our specialty. I fully agree with the ideas advanced; at the same time it seems to me there is a channel in which we should work in order to bring the matter before the public as it should be. We all know how long it takes the general public to receive a new fact of any kind. Everybody used to believe the world was flat. Darwin's theories have only begun to be accepted by the best people. I believe that if it were possible for us to so advertise the simplicity of this thing with the general public the matter would advance in favor much more rapidly. All dentists know that such a thing should be done. To properly introduce such a plan we would have to begin with our own students. Those of us who are teachers should impress it more fully upon students at the beginning. We should teach the general public that the simple fact of cleanliness prevents disease more than anything else. Until we can impress this fact I do not think we are apt to make very rapid progress. The insertion of fillings and the treatment of diseases of the mouth seem to me of minor importance compared with this. I think it is becoming of us as a company of progressive men to give our endeavors to the accomplishment of some plan whereby the suggestions of the Chairman's Address can be carried out not only by the dentists, but by the general public. I want to say again that I approve of the paper in its entirety.

Dr. Fredericks, New Orleans.—Prophylaxis in the case of the teeth, and in everything else respecting human nature, seems a good thing and we ought to endorse it. These things ought to be done, but we do not do them. For instance, we will sometimes see an educated physician, one who knows the consequences of the morphine or alcohol habit, make use of them and become their slave. On the other hand, to show what nature does for us, look at the negro's teeth, which oftentimes never have a tooth-brush on them. If we followed nature more closely there would be less need for prophylaxis.

Dr. M. L. Rhein.—In setting forth this proposition it has been my object not to enter into any question of etiology, or methods of treatment, or anything of that kind, but to consider simply the advisability of adding to the dental laws in the various States a clause, not necessarily permitting the employment of dental nurses, but defining their limitations, making it apparent that they are legally entitled to be of use. I am certain that as a physician, if I desire to employ a nurse for this purpose, I have the same right to that use as I have in any other capacity as a physician, and I am sure I could carry my point legally; but it is my desire to have their sphere well defined, so that there would be no objection to their use by the general dentist. I do not care to enter into the question of how difficult it is to bring a new plan before the public, but in my own mind I am certain that if my plan meet with general approval, the next step will be easily accomplished,—that is, the addition of a training-school for dental nurses to the regular training-school for nurses. I trust that the gentlemen, in order to facilitate the other business, will give the Section the benefit of their thought on simply this particular point.

Dr. George F. Eames, Boston.—As is the case to-day and at other times, whenever Dr. Rhein gives us a paper he covers the ground so thoroughly, and his views are so in accord with my own, that I am unable to say anything except a word of commendation. I have in my practice carried out many of the principles which he has enunciated here, and have trained assistants to supplement me, rather than to take entire charge of what we may call prophylaxis. When I begin a prophylactic treatment of the mouth my assistant usually sees what I do. I take opportunity then to explain what is to be finished, or I direct such an assistant to do such and such

things. The matter is perhaps not exactly to the point, and yet to the point of the desirability of having regularly appointed dental nurses; that is, the education of the public as to the desirability of this, it seems to me, comes under the head of a principle which all stomatologists should endorse and have carried out from the beginning of their practice. There is no section of work that can require more blind confidence and trust in the practitioner than dentistry. I often say to my patients that unless I can be the doctor and they trust me as such, believing what I do is for their best good, I would rather give up my profession. When I assure them that in the prophylactic treatment of the mouth I am doing the very best I can possibly do for any patient, and the most important work that can be done in the mouth, they must believe me and co-operate with me in that work. That done, the rest becomes easy. When a graduate receives his diploma from a dental college, or from any institution, it grants him certain privileges, but it is understood that with these privileges within the law there are also certain restrictions. It is so with the appointment of graduate nurses or dental nurses. They do have the privilege of doing certain things within the mouth under the direction of the stomatologist, but there are restrictions to this as well as to other privileges. It seems to me we cannot but endorse the plan that has been suggested by our chairman.

Dr. Gilmer, Chicago.—I am thoroughly in accord that it is important, that it is necessary, to have a better way of accomplishing the work spoken of than by the methods that now prevail. How we can bring that about I do not know. It would be better, it seems to me, to have specialists for that work. The treatment of diseases of the mouth offers a very large field. It does not seem to me that we could trust the treatment of the so-called pyorrhœa alveolaris, except the merest first cleansing or some subsequent medication, to any one who is not thoroughly skilled in that work. I consider this treatment one of the most difficult things to perform,—that is, the thorough removal and the surgical treatment of this so-called pyorrhœa alveolaris.

As to the training of nurses in the hospital for certain work, with this I am in accord; and my connection with hospital work and the teaching of nurses give me some positive ideas on that subject. I very thoroughly approve of the training of nurses in the care of the mouth, in the preparation of the mouth previous

to surgical operations, and in the various diseases, and I think we should continue the education of the people by personal advice. I believe I save more teeth and do far more good in the prevention of disease of the mouth by constant demonstration and insistence on the care of the mouth by the patient than by any other means.

Dr. Fredericks, New Orleans.—I do not find fault. "Cleanliness is next to godliness," and if it could be carried out it would be conducive to health. The chairman's paper deserves all the commendation and praise; at the same time, we must look at the other side.

Mr. T. E. Constant, Scarborough, England.—Mr. President and gentlemen, I do not know that I can add anything to what has been said by the previous speakers, because I think that no dental surgeon would hesitate for a moment to endorse everything that our president has said in connection with the matter. None of us have any doubt at all that the public would be greatly benefited by such a scheme. But, of course, our laws in England are such that the education of such a body of semitrained people might act injuriously. Whether this would be so in this country I am not in a position to say; but that is the aspect of the question that we would have to consider. On the broad question as to whether the suggestion is a good one for the public generally, I think there could be but one answer,—that which has been given by the other speakers.

Dr. W. E. Walker, New Orleans.—Mr. Chairman, I thank you for the privilege of speaking simply a few words of commendation. I do not see any harm that could come from the plan, and I can see infinite good to come from it. When in general practice a very large portion of my time was spent in doing the very work that the paper suggests, having great assistance in the work by lady helpers. While I would certainly agree with Dr. Gilmer that the treatment of pyorrhœa alveolaris from the surgical standpoint would be rather unwisely placed in the hands of such semitrained assistants, at the same time they could be of great assistance if used somewhat as Dr. Eames says, to supplement the work of the dentist; and the paper does not carry with it anything more than a proposition to supplement, with the addition of legalizing, their practice. As the doctor said, he has a right to employ trained nurses to help in this work, whether they come from a training-school or have been trained individually. But the idea seems to

make it beyond the possibility of criticism on the part of the dentist who is not a physician, that he may freely employ these trained assistants in his office and not run any risk of criticism or legal complication. It would certainly be much better than employing undergraduates that you cannot hope to keep with you more than a year. I certainly cannot see any objection to it, and I hope the Section will endorse the idea.

Dr. H. E. Belden, New Orleans.—The ideas are in line with my views, and I think we should have dental assistants to carry out our wishes in cleaning the teeth. The cleansing is an irksome task on us and demands a great deal of attention. The lines for a livelihood are closely drawn, and we have to devote ourselves to the wider tasks in our profession, and if we can put off these duties which can be performed by assistants, I think it becomes us to do so. We help our patients by giving them treatment by our assistants carried out under our supervision. The paper is in accord with my views on the subject.

Dr. C. V. Vignes, New Orleans.—I think the idea of having such trained assistants is a very good one. From a legal standpoint, I do not know what condition exists in England, but I know that here any body can practise that which he may deem essential. It is suggested that these special nurses be trained, because the young man or graduate at the end of a few months would go into general practice. I believe that the trained nurse would do about the same thing. She would go into general housekeeping. I do not know how it obtains in other parts of the country, but down here trained nurses are pretty liable to get married, and the vocation is a stepping-stone to matrimony. I believe the field is a large one for young men, and that it would assist a great many to earn an honest living and keep them in the straight path; that is, they would practise in an ethical manner if they had the right start. I think it is an opening, not so much for the trained nurse as for the benefit of the young dentist who has a very hard road to travel.

Dr. Eugene S. Talbot.—I have no fear as to the future education of the dentist. The experimental stage is passed. Dental education commenced to shape itself when universities established dental departments. Although for fifteen or twenty years after that time there seemed to be a chaotic condition, yet the past five years has worked a wonderful change in the department of den-

tistry. The adoption of a four years' course is the culmination of the educational problem from a dental stand-point. The university will place this department of medical science on an equal footing with other specialties of medicine. The Section on Stomatology of this Association has played a prominent part in shaping dental education in America, and I for one am perfectly willing to let the universities work out the problem.

Credit should be given the late Dr. A. C. Hart, of San Francisco, for suggesting the cleansing and polishing of the surfaces of the crowns of teeth. Scientifically he did more in the study of this method than any individual. His death was a result of his enthusiasm along this line of investigation.

I agree with Dr. Rhein in relation to specially prepared women for the care and cleansing of the teeth as first suggested by Dr. Wright, of Cincinnati. That such women should be connected with hospitals to care for the mouths of the sick is certainly very important. How physicians can expect to successfully treat their patients with uncleanly mouths is a problem. It would seem to me that this paper should not only be published in the *Journal of the American Medical Association*, but later in all medical journals in this country and in Europe, and that reprints should be sent to all the hospitals. Every physician should read it. The dentist should insist on his patients coming to his office every three months to have the teeth cleansed. When the patients understand that by so doing they are saving dollars in fillings, etc., they will readily acquire this habit. If all dentists would do this, the public would be educated soon to this method.

Dr. Rhein (closing).—I desire to take up just a few moments of your valuable time in closing the discussion of my address. I have tried not to take up the time of the Section with any exhaustive treatment of the subject, and it has been my desire not to go into the various influences that would be felt from the pursuance of such a plan as I have formulated. In my practice the plan of the return of the patient, as mentioned by Dr. Talbot, is pretty well in effect. Every one of my patients is sent for at regular intervals. The presence of caries is not considered. The removal of the racemose organism, which is so painful in its effects in early life, and of the plaque formations are equally important.

In regard to Dr. Gilmer's remarks, I do wish to say that it is

far from my purpose to permit a trained dental nurse (if I may use the term) to perform what he and I believe all dentists consider one of the most serious and difficult surgical operations. That such people should not be permitted to work in that condition or in the ordinary forms of dental work is the main object I had in introducing this matter and in asking for your approval of the suggestion to legalize the position of a dental nurse so as to legally establish the limits of her sphere of usefulness. Personally I would prefer that these assistants be women, the reason for which I will not take the time to explain. In my opinion, they might be permitted to remove deposits in normal mouths, but in distinctively pyorrhoeal cases their duty would come only after the surgical work had been completed by the surgeon, in following his direction in thoroughly polishing the tooth-structures and in carrying out any medication under his direction. I desire to strongly emphasize this. In conjunction with this comes up the point raised by Mr. Constant. His objection to its usefulness is based upon the condition of legislation which does not exist in the United States. I understand that in England the passage of such a law might give an improperly trained person an interest in dental practice and an improper opportunity to work their way before the public without being interfered with by the law. In the United States, in most of our States, at the present day the laws are rigidly enforced. This is especially true in the eastern part of the United States, and here it would be impossible for infractions of the dental law to be performed. I would also say, in reply to Dr. Gilmer, that it is a great pleasure to me to know that there is one hospital in the United States where the mouth is properly prepared preliminary to the surgical operation. I know of no such condition in the city of New York. In that respect we are rather behind the West. Outside of that one hospital, I think the general surgeons in Chicago or of the Northern cities do exactly what the general surgeons do in the East: when they open the peritoneum, when they have an operation for appendicitis, or a laparotomy, the condition of the patient's mouth is not considered. That has been my experience in the East, and I have seen some such conditions in the West. I do not for an instant suppose that any of us who do surgical work would permit any patient of ours to go on the operating-table in such condition. I refer to those medical men who are absolutely devoid of the ordi-

nary rudiments of knowledge as to the oral conditions and the septic influences that may proceed from the oral cavity. I thank the members heartily for the kind approval which they have given the address.

Dr. Talbot moved that a committee of three be appointed to consider the suggestions of the Chairman's Address and to form resolutions. Seconded and carried. Dr. George F. Eames, of Boston, Dr. W. E. Walker, of New Orleans, and Dr. Eugene S. Talbot were appointed such committee.

Dr. Talbot offered a resolution that Mr. T. E. Constant, of Scarborough, England; Dr. A. C. Spaulding, of Paris; Dr. D. E. Causch, of Brighton, England; Dr. Michael Morganstern, of Strassburg, Germany; Dr. Oskär Römer, of Strassburg, Germany; Dr. H. Pichler, of Vienna, be made members, by invitation, of the Section on Stomatology. Seconded and carried.

It was moved and seconded that the following gentlemen be recommended as associate members of the Section on Stomatology: Dr. H. E. Belden, Dr. C. Edmund Kells, Jr., Dr. Paul de Verges, and Dr. Jules J. Sarrazin, all of New Orleans. Seconded and carried.

SECOND SESSION.

The second session of the Section on Stomatology was called to order on Wednesday, May 6, at 2 P.M., the Secretary, Dr. Eugene S. Talbot, in the Chair.

A paper on the "Tolerance of the Tissues to Foreign Bodies, with Special Reference to the Pulp and Gums," was read by Dr. M. H. Fletcher, of Cincinnati.

(For Dr. Fletcher's paper, see page 596.)

DISCUSSION.

Dr. Eugene S. Talbot.—In the discussion of Dr. Fletcher's paper I am obliged to take issue with him in a number of points. While it is possible that gutta-percha will be tolerated at the apical foramina more readily than a steel broach, yet to understand the pathology arising from such irritant we must first take into consideration the structures involved. We cannot compare the peridental membrane and the alveolar process with other structures of the body. The alveolar process is a transitory structure; the tooth to a certain extent is a foreign body. The alveolar process

and peridental membrane, unlike the other structures, has not come to stay. It is waiting for the least irritation to set up absorption and destruction of the peridental membrane. While it may tolerate gutta-percha better than metal, in either case the irritation produces absorption and destruction. It will not encapsulate foreign substances like other tissues. I have demonstrated this many times in many ways. Neither can we contrast a pulp like that of a human tooth with that of an elephant's tusk or a pulp that is persistent, as I showed in my paper last year. The pulp is practically a degeneration, even in health. The expansion and contraction is nil, hence pulp-stones and frequent inflammation resulting in abscess of the pulp without pain. The restricted portion of the apical end of the root restricts repair. The constitutional causes of interstitial gingivitis have local action because the gums are a secretory structure, and because of the transitory nature of the gums and alveolar process, next to the nervous system, they are always the first involved. The arteries, nerves, and veins terminate in this structure. They come up against a blank wall or nearly foreign substance (the root of the tooth), hence it may be called a terminal structure. I agree with the essayist that tartar invariably produces interstitial gingivitis, and in that case is entirely local in its origin, but the constitutional variety may best be illustrated in something like eighteen or twenty syphilitics that I have had in my practice for a number of years. By local treatment I am able to practically restore the gums and alveolar process to health, and the patient leaves my office after a given length of treatment feeling finely, but they invariably return, sometimes in six months, a year, or two years, with marked interstitial gingivitis. No matter how well the patient may be in a general way, here we have marked illustrations of the constitutional variety. What is true of syphilitics is also true in consumptives, diabetics, and auto-intoxications of all varieties. The calcareous deposits are no doubt irritating to the surrounding tissues. They should in all cases be removed. I wish to congratulate Dr. Fletcher on the admirable manner in which he has handled the subject.

Dr. A. E. Baldwin.—I am not sufficiently conversant with many of the points made by the essayist and Dr. Talbot to discuss them in their entirety and would want to thoroughly digest the material presented before I would feel competent to discuss it intelligently. There are one or two things in the discussion by Dr. Talbot that

strike me from a little different stand-point, and this brings me to the point spoken of in our Saratoga meeting. I think we as a profession, belonging to the great medical ranks, ought to define our premises a little more closely than we do, and then we could have much more intelligent and accurate discussion. As, for instance, we speak of degeneracy being a change from the normal. The first essential is to fix upon the data for the normal. Without this we would be discussing largely in the dark, because every one's stand-point would be different as to the point taken for normal. The statement has been made that the pulp itself is a degenerate condition. Before I could accept any such statement I should want to know very definitely what is considered normal.

The essayist speaks of the tolerance of the tissues for certain things, and mentions an illustration of seventeen years' standing. I think the position of the essayist that there is an apparent tolerance is well taken. I had a similar case in my own experience in a left lateral superior incisor. After two or three years I removed it because I was conscious, in examining the mouth, of a little projection under the lip. There was no irritation. I removed the substance and intended to make an examination of it, but in the moving of my office it was lost.

I would be very glad to hear from Mr. Constant, our visitor from abroad.

Dr. Curtis.—The tolerance of the tissues for foreign substances varies, I believe, according to the nature of the substance. The doctor has brought that out very clearly and demonstrated that the bullet or similarly irritating substance can be tolerated for a long time. I have in mind a case brought to my attention of a child who stepped upon a headless pin, and by the time a physician reached the house it could not be found. Three physicians consulted upon the advisability of operation, and three months later the pin came out at the hip. The patient found that the clothes were cut. There was slight inflammation, and the pin was pulled out by the trephine, and no trouble at all resulted from the accident. I know a gentleman who has a very large hypodermic needle, an aspirating needle, in his leg, and it has been there for some twenty years. Evidently it has lodged against the bone and does not take the usual course of passing through the tissues. I suggested the use of the X-rays, but he said he did not want them,

and that he would be more comfortable if it were not located, as he was in good health.

I cannot agree with the point taken by Dr. Talbot as to the tooth being a foreign substance, unless, perhaps, he considers the tooth a degenerated foreign substance. I believe that when the tooth begins to develop it begins to degenerate.

I think gutta-percha is better tolerated than any other substance. Some instructive lessons might be gained from the use of the X-ray.

The syphilitic phase of interstitial gingivitis is one that for many years has interested me. I have felt that many if not all the recurrent cases of gingivitis are due to syphilis. When the inflammatory process returns after carefully administering proper treatment, I have found that the cases usually do well under syphilitic treatment, and in a great many such cases have proved beyond doubt the presence of syphilis. It has not always been acquired by the patient, but was sometimes inherited. We know that the child of a syphilitic parent, either father or mother, has syphilis. It is a positive fact that the children inherit the diseases of the parent which are present at the time of conception, and that the mother usually becomes diseased at the time of gestation. These cases are perhaps the most difficult to treat because of the lack of definite knowledge. I have gained my knowledge more particularly through the study of life. The germ or spore of syphilis is detected in the blood. A Russian explained this in his text-book written long ago, but being before the time of the microscope, he was unable to give us definite data by which we could conduct our experiments. I believe that wherever I find the syphilitic spore the patient bears the mercurial treatment well, and if placed upon very mild preparations of small doses of the red oxide or biniodide of mercury they do well. I usually give a sixteenth of a grain three times a day, increasing it two or three times. If the treatment is persisted in for months, you can eliminate the degenerative condition which maintains this syphilitic gingivitis.

Dr. M. L. Rhein.—I want to compliment Dr. Fletcher upon the admirable paper presented. I regret that I find myself somewhat in the same position with Dr. Baldwin in being unable to discuss the paper as fully as I would like. I was especially pleased with a few little technical points in the essay. We have at times been

accustomed to the use of terms that were rather exaggerated, and I was very much pleased to hear Dr. Fletcher make use of the term "sapræmia," instead of septicæmia. I am convinced that we get very few cases of real septicæmia such as the one he cited, which is a distinctive exception to the general run of cases which are sapræmic in their nature. We are here for discussion, and from a surgical stand-point I take exception to the view of the essayist regarding the after-effects of extraction of a tooth under the circumstances cited. I cannot conceive of a case of this nature in which surgical interference can be objectionable or be a potent cause for evil. I was considerably astonished to see the essayist take the view which he did,—that the extraction of this tooth may have had or did exercise a considerable bearing on the fatal ending of the case. It seems to me contrary to all the accepted surgical principles at the present time. Furthermore, it brings up the question frequently met with, whether because of the presence of pus it is not advisable to delay the extraction of a tooth, supposing it to be determined upon. This is a question well worth the consideration of this Section.

I agree with the essayist, and am opposed to the view of Dr. Talbot of the tolerance of foreign materials in the vicinity of the peridental tissues. My own clinical experience with the use of gutta-percha and my examination and careful observation of hundreds of cases leads me to coincide very thoroughly with Dr. Fletcher that gutta-percha is tolerated in the most remarkable manner by the soft tissues. I could cite a number of interesting cases bearing out this view. If there is a substance which the tissues will tolerate more freely than gutta-percha, it is perfectly fused porcelain. I have demonstrated that by the magnificent tolerance shown by the tissues in the amputation of a necrosed root in one of the multirooted teeth, attaching a porcelain root to such a crown. The observation of these cases for three or four years shows such a remarkably normal type of healthy gum tissue around the porcelain root as to thoroughly endorse the general proposition laid down by the speaker.

I rather regret that Dr. Curtis brought my name into his view of the syphilitic origin of so many cases of interstitial gingivitis. While I am thoroughly aware that syphilis plays an important rôle as a cause of peridental pathological conditions, I am totally opposed to the extreme view that Dr. Curtis takes on this question, in

which he says that almost all cases of recurrent pyorrhœa or interstitial gingivitis will show a distinct syphilitic origin. I also do not coincide with his views that the syphilitic germ can be for a certain number of years demonstrated in the blood. Dr. Lisquaid claimed to have made this discovery twenty-five years ago, but it is well known that the matter is disputed at the present day. The point hinges upon our ability of diagnosing a pre-existing syphilitic state by a blood examination, and I do not care in any implied way to appear as accepting the view laid down by Dr. Curtis.

Dr. Hans Pichler, Vienna.—Besides gutta-serena, paraffin is well tolerated, as the large surgical uses of this substance show. Dr. Trauner, of my city, has used it for the filling of old cavities with open foramen before the development of the teeth is completed, and he has had good success.

Dr. Curtis, New York.—I think the question of extracting the teeth in the presence of inflammatory processes would depend entirely upon the individual case. You can lay down no rule whatever for such extraction. In this case I have no doubt the extraction did much to hasten the fatal ending. I think there evidently was an acute inflammation, or acute infection, lighted up by reason of opening new tissue to this disease, against which the physician and patient were battling. I therefore believe it better to temporize with these cases and try to tolerate this inflammatory process until the greater part of the other trouble has been disposed of. Ordinarily speaking, I think the extraction of these teeth is wise, but never when the extraction is liable to extend the inflammation.

Dr. George F. Eames.—It seems to me that the opposite views expressed on this paper have a great deal of truth in them, because we can all in our experience recall cases of great tolerance of the substances named by the essayist. We can also recall instances in which there has been little tolerance to foreign bodies, and when Dr. Talbot said that when we consider the tolerance of foreign bodies in these tissues we must take into consideration the structures involved, he would have done well if he had said, we must take also into consideration the general condition of the individual. It seems to me that explains the very great difference of patients in tolerating not only foreign bodies, but all toxic irritating substances. The case of death to which reference has been

made I think should not be classed as rare. I believe there are a great many cases of death from autointoxication from this condition of inflammation in which pus is swallowed and fresh infection caused, and in which the diagnosis has been entirely different. I remember a case in which a patient suffering from gingivitis made the remark that she was in no fit condition to go to a dentist. My answer was that if she did not see fit to come to a dentist, she would have to have the undertaker. The attending physician did not realize that the condition of the mouth was bringing death to the patient.

As to the extraction of teeth in the condition named by the essayist, while it would seem that the surgical principle of removing the irritant at once should obtain in most dental cases, yet we have on record a number of cases in which very serious results have followed the extraction of teeth. We have to recognize that when another tooth has been extracted the poison has continued and great destruction followed. I believe this must be due to fresh infection of a surface reopened, and that there is some truth in the statement that we should get rid of the infection by some other means.

Dr. M. L. Rhein.—I take the liberty of speaking again in regard to this method of extraction. I certainly feel from considerable observation that all such cases as stated by Dr. Eames and Dr. Curtis are not due to the question of extraction, but due to the faulty surgical treatment involved in such cases.

Dr. W. E. Walker, New Orleans.—I have always felt, in cases in which death was stated to be due to extraction, that the position just taken by the Chairman is a correct one,—that death is not due to extraction, but to the faulty technique. Who can say in many cases that death would not have resulted had extraction not been done. In many of these cases of osteomyelitis simply removing the tooth is not sufficient. The marrow of the bone is permeated and should be treated. The whole mouth should be treated with antiseptics, and the socket as well. Considering the tooth as a foreign substance, as Dr. Talbot has said, and as being the cause of gingivitis, is, I think, placing the cart before the horse. I believe if we were to use the word inflammation more carefully, and not consider as inflammatory conditions those which are simply passive hydræmia, we would be more correctly understood. In cases of so-called gingivitis, or Riggs's disease, in the

early stages, I believe the tooth primarily is not an irritant, is not a cause, and is not a semiforeign substance, but that the disease is due to some local condition, together with lack of exercise calling for proper nourishment. Again, there is some systemic condition. In the majority of cases we have an accumulation of the blood on the venous side of the circulation, and because there is not the normal stimulus due to mastication the faulty general circulation becomes more manifest in the gum tissue. There is a lack of the normal stimulation of the vasomotor system, and this passive hydræmia keeps the tissues overfilled with blood of a venous variety which does not contain oxygen, and the tissues, though abundantly supplied with blood, are starved. The condition may be likened to Canal Street, where there may be a great mass of people but less business being done than if there were but one-half the number on the street. We know that the cementum contains hundreds of layers which have been put on during the life of the individual. This I think seems to demonstrate the fact that the fibres of the cementum have but a limited life, that they cannot hold on indefinitely to that tooth and hold it in its socket, and that additions of fresh cementum entangle fresh fibres to hold the tooth. The old fibres lose their life and a separation occurs. The connective tissue is exposed, and we have weeping of the serum. The bone is not nourished, and this serum in oozing out contains more lime-salts than the serum would ordinarily contain, more than the blood would contain. There is the additional mechanical irritation of the calculus, and a separation of the tooth results.

Dr. Eugene S. Talbot, Chicago.—It is very necessary that I should go on record regarding this matter. Dr. Walker misunderstood me. I did not intend to say that the tooth as a foreign body produced irritation. It acts somewhat as a blank wall. Otherwise I agree entirely with what Dr. Walker has said.

Dr. Fletcher (closing).—Dr. Talbot's position as to the transitory condition of the alveolar process of the tooth seems to me to apply to the hair and nails, to the tubercle, the pulling of the muscles. I think the law is established that where you have the attachment of a muscle you have these tubercles formed. If the human nail is not transitory why is it not like the baboon's, twice as thick. The alveolar process and tooth must be looked upon as transitory structures, but I fail yet to see why they are not susceptible to repair as long as they are present. It is a fact that

the organism of the universe is probably losing certain structures for the benefit of the organism itself. With all the doctor's work I am stubborn enough to say that I have failed to be convinced that the transitory structures need necessarily without local irritation be subject to disease more than other structures. I should hope to be convinced if I am wrong.

The matter of systemic production of interstitial gingivitis by medicines, by syphilis, or by other systemic causes seems to me so absolutely difficult to prove that I must take the opposite position until they are proved. I would like to see a series of experiments carried on bacteriologically with the infection of the healthy gum. We would then have a basis for an opinion. While I admit that the gentlemen have reasonable grounds for their opinions, I feel that I have reasonable grounds for the other side.

In regard to my position about the extraction of the tooth, my paper did not give sufficient details, for the gums and alveolar process were in the worst possible condition and the gums of all the teeth were sloughing. It is possible, as Dr. Walker suggests, that the patient may have died without the extraction. Knowing the patient as I did, I believe, had the treatment been temporized as suggested by Dr. Curtis, the life might have been spared, but my counsel in the case was not heeded. The older surgeon was treating the case for acute tonsillitis.

Dr. Rhein.—Do you suppose with the condition of the worst possible kind that after removal of the tooth, if the proper germicidal agents were kept in that socket for a sufficient length of time, there would be any possibility of infection in that particular case?

Dr. Fletcher (answering Dr. Rhein).—I believe so, because I believe it is practically impossible to sterilize an open bone unless you have removed it. The deeper you scrape, the deeper and larger the blood-vessels in that bone get to be, and I believe that the blood clot may become septic in the mouth. I may be wrong, but I do not see how we would be able to make such a condition absolutely aseptic. I will admit that if it could have been kept perfectly aseptic this may not have added to what I believe was the cause of death. I think the extraction of the tooth with the addition of the septic condition turned the case downward instead of allowing it to recover.

DISCUSSION OF MR. CONSTANT'S PAPER, "THE DENTAL PULP, VIEWED WITHOUT THE MICROSCOPE."

(For Mr. Constant's paper, see page 411.)

Dr. Eugene S. Talbot, New York.—Just where the dental papilla leaves off and the dental pulp begins is a question worthy of discussion by competent men. Why the formative should possess two distinct names I am unable to state. What is called the dental papillæ still requires a large amount of research work especially along the line of histology. I am glad that Mr. Constant has given so much thought to the dental pulp. We as practitioners of stomatology have not laid stress enough upon this organ from a scientific point of view. This I have stated before, and it was for the purpose of bringing this organ more forcibly to the notice of the profession that I had instituted these symposiums from year to year in our proceedings, and I trust that more work will be done upon histology, physiology, and pathology of this structure.

I wish to congratulate Mr. Constant on the very scientific manner in which he has presented his paper and the ingenious theory advanced as to the method of eruption of the teeth. I cannot fully agree with him, however, in this matter, since it will not to my mind account for all the phenomena connected with tooth eruption and elongation. His theory of setting up irritation by blood-pressure about the crown is good, but from this point on there are other conditions which must be taken into consideration.

The pathology in erupting teeth is clear. No matter what the propelling force may be, there is an irritation set up around the crown of the tooth in the alveolar process. This irritation produces inflammation. Halisteresis and Volkmann's perforating canal absorption are set up, and room is made in the bone for the advancing crown. The same inflammation, although not quite so severe, sets the bone-cells at work at the border around the root, thus forcing the tooth forward. It is barely possible that these bone deposits are what Pierce intended to illustrate by pounding upon the barrel to remove the bung. If Mr. Constant is correct in his theory, so far as the starting of the crown is concerned, I may agree, but certainly it would not account for the eruption of the tooth after the roots had begun to form. The blood space is so small and the resistance so great that it would appeal to me to be due rather to the bone-cells filling around the

roots than to blood-pressure. What is true of the eruption of teeth also holds good in teeth that have lost their antagonism, years after the roots are completely formed.

In regard to root absorption, I do not understand the difference between pathologic and physiologic absorption of roots or bone tissue. Absorption is absorption, regardless of the irritation and inflammation. The only difference I can see is one of degree and form. I have given many years of study to the pathology of the alveolar process, and I think when once understood it is very simple. We must understand, first, its normal condition, which is the key to the whole subject.

The death of the pulp *per se* does not make the root incapable of absorption as suggested by the author, nor does the crown impinging upon the dead root always cause the deflection.

There are three forms of bone absorption,—osteoclast or lacunæ, Halisteresis, and Volkmann's perforating canal absorption. All are brought about by irritation and inflammation. Root absorption is always due to osteoclast or lacunæ absorption. It makes no difference whether the pulp of the tooth is alive or dead, this absorption is the same. If the pulp is dead, the absorption is much greater than when alive, as witnessed in implanted teeth. When the pulp of a temporary tooth is destroyed, or dies, irritation is set up at the end of the root, inflammation of the peridental membrane and alveolar process takes place, and the surrounding bone and trabeculæ or fibrous tissue which holds the lime-salts together is destroyed. Since it is necessary for the trabeculæ or fibrous portion of the alveolar process to be present in order to hold the osteoclasts, it being destroyed, the osteoclasts cannot absorb the roots of the temporary teeth. The remark of Sudduth that the absorbed and the absorber must be in close connection is very apt in this case. The alveolar process having been destroyed, the root of the temporary tooth is only held in position at the cervical margin by the gum and alveolar process. The deflection of the root, therefore, may be simply the result of mastication and not always caused by the crown of the permanent tooth.

We are obligated to Mr. Constant not only for his paper but for his presence at this meeting, and while we are not so many in number, yet I can assure him that the theories advanced in his paper will ever after be associated with his name in relation to this subject in this country. The purely scientific men in this country

or abroad are few, but there is this satisfaction to him, as well as to us, that we are trying to advance our specialty along given lines regardless of nationality.

Dr. Fletcher.—I would like to ask Mr. Constant why the tooth is not pushed forward after the root is completed?

Mr. Constant (replying to Dr. Fletcher).—Dr. Fletcher and Dr. Talbot apparently are at a great difference on the same point. Dr. Talbot says that he quite agrees that he believes the tooth could commence growing, but does not believe that after formed there would be force enough to keep it coming up. That is what I pointed out. In the diagram on the right side of the black-board there is a broad base of vascular tissue upon which the pulp rests; consequently the lifting force is very great. It is less there (indicating); it is less here (indicating); it is less here (indicating). Still there is a little extrusive force in the peridental membrane. As we find when we get inflammation of the pericementum, you get the tooth raised in the socket. The reason it is not entirely extruded is that while the pulp is alive the alveolus expands it to a certain extent, and by the time the alveolus has gone a little beyond the normal the fibrous tissue in the pericementum has developed to such an extent that it forms a ligament of the tooth, and the development of the fibrous portion of peridental membrane ties the tooth in its socket. I did not explain that in the paper, because I believed it would be obvious without stating. There is an extrusive tendency given by the vascularity of the pericementum.

The Chair ruled that the further discussion of Mr. Constant's paper be postponed until the following morning.

Adjourned to Thursday, May 7, at 10 A.M.

THIRD SESSION.

The meeting was called to order at 10.15 A.M. by the Chairman, Dr. M. L. Rhein.

The discussion of the paper of Mr. Constant, of England, was continued.

Dr. M. H. Fletcher, Cincinnati.—If I understand the condition that Mr. Constant describes, it seems to me that the subject for discussion might be divided into the physical properties and the chemotactic, or, if I may be allowed to use the word, psychical properties, the opposite of the physical. His hydrodynamic theory

of the pressure from below by the pumping of the blood, it seems to me, is the most satisfactory explanation we are to have, if we must have a physical explanation for this process of the eruption of the teeth. It is not certain to me that we need such a theory. At the same time, I want to compliment the essayist on the unique features which he presents and to say that they appeal to me and to my method of reasoning better than any theory that I have heard. If we accept his hydrodynamic theory of the pumping of the blood into the cavity or reservoir of soft tissues below the hard, it accounts, of course, to quite a degree for the movement of the tooth out of the alveolar process, whether it be above or below. Nevertheless, when a tooth is completed, we have in a sense a more perfect hydraulic press than we would in the other way, aside from the fact that we have a little background. In other words, in the hydraulic press you have a small opening into a chamber. The pressure of blood comes into this, pushing the plunger forward. In this condition the tooth itself could be considered the plunger, and the pressure of the blood-vessels coming in at the apices of the roots would undoubtedly force the tooth out of the socket. If I understand the philosophy of hydrostatics, we have in the body a great many mechanical processes whereby motion is made or extrusion accomplished. The peristaltic motion of the intestines is an example of the extrusion of bodies. At the same time, I do not understand that we have such a condition in the eruption of the tooth. In applying this hydrodynamic force we can account for many of the features from a physical stand-point. I am inclined to look upon this as a process or one of the forces of a body which comes under that of differentiation in the field of electricity and physics, and the law of differentiation so far as organic material is concerned. It is the law with electricians to see that a conductor of electricity moving at the rate of one inch per second through a magnetic field will produce a variety of pressure. We do not see electricity; we only know by its results what we have. We know we have our electric light and power. The eruption of the tooth, to my mind, could be compared with the expulsion of the ovary from the ovum. We have a like movement there. I do not see that we could apply hydrodynamics to that. When this ovum is about to be expelled we have the fimbriæ enclosing that ovary. We can easily understand how, when it is discharged into the Fallopian tube, it may be forced along by the ciliated epithe-

lium. But why do we have the rising to the surface of this ovum? What is it that causes the fimbriæ of the Fallopian tube to grasp the ovary? We have here powers in physiology which to my mind explain more fully the mechanism or the processes of the eruption of the tooth than any mechanical process. In the differentiation of cells we are in the field of the unknown. We accept the facts, and that is as far as we can go. Why is it that when the ovum is discharged there is a force, which I believe might be called chemotactic (we have such a term in chemistry), which moves the male element to the female element? Why is it we have a differentiation of cells or a segmentation of the ovum? What is it that makes this proliferate into three layers of cells, epiblasts, mesoblasts, and hypoblasts, from which all life is developed? Here are forces that seem to me we deal with in the eruption of the tooth. Why, in the bifurcation of the root of the tooth, is it that we have the molar developing to make two or three roots, or why, in the incisor tooth, do we have only a single root? This is a differentiation of structure or of the development of tissue which I do not believe we can account for, but which we must accept just as we accept the theory of the production of electricity by dynamos. To me this chemotactic process or this attraction which one organic element has for another, or this law whereby we have the development of the various tissues from the one cell, is the only one by which we can really account for this process. This mechanical theory is certainly the best I have heard; at the same time, it does not to me account for the eruption of the teeth and their pushing forward. We can readily understand how a tooth may be diverted from its normal tract and still develop. That could be accounted for mechanically, but to account for the eruption of the tooth mechanically seems to me is not in line with the best and most scientific researches in biology. In the study of physiology and the differentiation and development of cells we are obliged to accept these laws. We know that they do certain things, but why they do I do not think we can understand. Again, to cite other plans of movement in the study of cell life, we have the kinetic process. Why do we have the repulsion of one part of the nucleus from the other? There is a kinetic force here which we do not understand. We have simply in the beginning a differentiation of these chromatic bodies. They finally divide. I should be pleased if the theory of Mr. Constant could

be accepted as final, but to me the theory of the mechanical eruption of the teeth is not the most scientific way of working it out, although I believe it is probably one step towards the solution. If we can determine that this is really the process by which the teeth are pushed out or that it is a part of the process we are nearer the solution not only of this problem, but of many of the mechanical movements about the body.

Dr. Hans Pilcher, Vienna.—I believe with Dr. Fletcher that we do not know all about the evolution of the teeth. We do not know the cause that starts the whole thing. We do not know the cause that starts the first labor-pains, the first movement towards the birth of the child. I believe we know now the mechanical forces which bring about the movement in the tooth, and we are very much indebted to Mr. Constant. The theory of Mr. Constant is so extremely feasible to me that I believe in it to its fullest extent. In some way the process cannot be entirely mechanical. If there is not something that induces an increased pressure in the pulp tissue there would be a similar pressure from the other parts, even though they may consist of hard bone. I believe that we have to rely upon influences of the nervous system for all these things, and we must suspect that the influences from the nervous system by the vasomotor nerves, or the trophic nerves possibly, must have their influence in this particular kind of movement. Then, there is another thing I would like to ask about, whether any of the gentlemen have seen in a case of acute inflammation of the peridental membrane that a tooth did not elongate because the roots had not the conical form. I do not believe there is such a case, with the exception of cases in which there is very great divergence, which would make a mechanical impossibility of the tooth coming out. It seems to me that those teeth in almost all cases elongate, so I believe the increase of blood supply in the peridental membrane may be taken as an explanation of the final coming out of the tooth.

I wish to congratulate Mr. Constant very heartily, and to say that I believe we and the profession at large are very much indebted to him for his interesting paper.

Dr. A. E. Baldwin, Chicago.—Of all the theories that have been advanced for the eruption of the tooth, I think we are greatly indebted to Mr. Constant for this one. It appeals to me more strongly than any other. I do not think it explains completely

the causation of the eruption, but it approaches a full explanation more nearly than any other. I believe there is no law of dynamics or of science whereby we can fully explain these so-called physiologic laws. The explanation made by Dr. Fletcher of the discharge of the ovum is not fully accepted. The theory that he advanced is not accepted by many physiologists to-day, although it seems to be the most feasible explanation extant. I have long since dismissed as unworthy of consideration the theories advanced regarding the eruption of the teeth, and that advanced by Mr. Constant seems to me the nearest approach to a solution.

Dr. M. L. Rhein, New York.—Before asking Mr. Constant to close the discussion, I want to say that, so far as your chairman is concerned, it affords me the greatest feeling of pride and satisfaction to have been the chairman of this Section at a time when this paper has been presented to us. I do not know of anything that would have repaid me more for a visit so far from New York than to listen to Mr. Constant's paper. I felt yesterday at the close of the session that I wanted to give the paper some hours of consideration before expressing my views upon it, and for that reason suggested that the discussion be postponed until this morning. At the meeting yesterday afternoon I felt very much as Dr. Talbot and some of the other gentlemen expressed themselves,—able to recognize the thorough and logical sequences of the author's remarks, and yet with a strong feeling of doubt whether there was not some flaw in the fabric which he had so ingeniously woven and presented to us. It was after leaving the meeting and as I passed up one of the streets, seeing the working of a pile-driver, that I was struck with the forcible comparison between that mechanical force and the one presented by Mr. Constant. I have given the subject a great deal of thought during the night, and feel this morning that I am unequivocally a convert to all the ideas presented in the paper; and, until I see some demonstration contrary to the facts that I know myself to be true, and to what Mr. Constant has told us, I feel like giving thorough allegiance to his views. All through last evening little incidents in practice, especially in pathological conditions, came to my memory endorsing this view.

Our friend from Vienna, Dr. Pilcher, brought up a very interesting question bearing upon this forcing up of the tooth and whether it was more common in conical roots than in teeth with

roots turned and twisted. This pathological element, which undoubtedly has a strong bearing on the theory presented by the author in its applicability, also struck me as being a thorough confirmation of Mr. Constant's views. To make matters clear, in comparative anatomy, we all realize how the conical tooth of the rodent will ultimately cause the death of the animal if the occluding tooth is lost, showing the continuation of this force at work, which will ultimately produce such a condition. Of course, the tooth does not have the periosteal ligamentous attachment that we find in the human tooth. In the same way in clinical work on the anterior teeth, especially the superior incisor, one of the most distressing forms of periodontal disease is the sudden commencement of elongation of one of the incisor teeth, carrying with it the additional formation of the pericementum of the root itself.

There are two points about this pathological condition that appear to me to strongly confirm the ideas presented to us. The first is the fact that the shape of the roots of these teeth is very conical, and there is nothing in their shape that in itself would prevent such a forcing out of the tooth. The view presented by Dr. Pilcher, and in conjunction with this a number of radiographs that I have taken of such teeth, have shown little nodular deposits upon the pericemental tissues at different points of the root surface. I have a number of these radiographs in my collection. The connection between these nodular deposits and the forcing out of the tooth has never been clear to me until I listened to Mr. Constant's paper. Now it seems almost conclusive to me that this has interfered with the retentive force of the ligamentous tissue that holds the roots in the position they should occupy when they have been properly erupted. The second reason is that I have failed to see one case of this kind in which this process of elongation has not stopped as soon as the pulps of these teeth have been removed; and in a number of these cases I have found, in sealing the ends of the roots, orifices that were larger than those often found in an ordinary tooth. These are some of the instances that keep coming back to me in thinking of the practicable adaptability of these views, and the more I have thought of them the more have I been impressed that Mr. Constant's theory is the most scientific interpretation of the physiological action of eruption of any heretofore presented.

Mr. Constant (closing).—First, I must thank you for your

very kind remarks and the kind manner in which you have received the theory that I have placed before you. Let me first speak upon the point which Dr. Walker raised. When I received your kind invitation to attend this congress and to read a paper, it was my endeavor to bring to you something original. I had thought it extremely unlikely that a paper published some years ago in a comparatively obscure meeting should have reached these shores, and therefore I thought probably none of you had heard the theory before. It was somewhat of a surprise to me when I came to Philadelphia to see in the papers published in the Dental Section of the University my own name in connection with the theory of the eruption of the tooth. I was therefore somewhat pleased in one way, but dismayed in another, as I feared I should be presenting something with which all were familiar. The tone of the discussion, therefore, has relieved my mind, and I find that the theory to many of you, at any rate, is unfamiliar.

It would be impossible in the short time at my disposal to enter fully into every fact with regard to the eruption of the tooth. All that I desired to point out was that the very simplest fact in the whole problem had been ignored. It was not my intention to enumerate the things we did not know. I think we should require rather a long session for that, and I think therefore that, when we say that we do not know why the ovum comes to the surface of the ovary, certainly there must be something other than the mere mechanical force in connection with the eruption of the teeth. I think there are reasons we all fully recognize, but I do not think they are reasons for putting forward the purely mechanical side and ignoring the other. That brings me to the point raised by Dr. Talbot. Dr. Talbot stated that he did not think there was any difference in the removal of roots of temporary teeth by resorption and by absorption. I think on that point I must join issue. In the first place, the duration of the process is markedly different and the macroscopic aspect of the roots is widely different.

Dr. Talbot.—I said in roots that had dead pulps and implanted teeth.

Mr. Constant.—I must have misunderstood the point.

Dr. Talbot reads the part of his paper in question.

Mr. Constant.—I inferred from that that Dr. Talbot was of the opinion that, whether a temporary tooth was alive or dead,

exactly the same process of absorption occurred, but I see that it does not admit of that construction. My contention is that it is rather more than a question of degree. The appearances, so far as I have seen them, seem extremely different in the two instances. In the one case you get very clear, sharply cut nodules of the edge of the root. In the case of the root of a temporary tooth in which the pulp is being destroyed (I am speaking now entirely of the macroscopic appearance) the surface of the dead root is covered with thick membrane and the edges of the absorbed part are smooth. That is what I term the result of pathological process of absorption. The physiological process of resorption which takes place when the pulp is alive differs very markedly, that difference being the sharp margins and the absence of one thickened membrane which has the greasy feel in the other case.

It is a pleasure in a way to find myself in disagreement with Dr. Talbot, because there is so much upon which we are in accord that it is refreshing to find a point or two upon which we can disagree.

Dr. Talbot speaks of the process of the removal of subjacent tissue from the advancing crown as a process of inflammation. I do not like the term inflammation, used in that connection. I do not want to enter into the point of exactly what takes place during the removal of subjacent tissue, as I wish the simpler point to be cleared up first. Until we are in agreement as to the mechanical force which brings the tooth to the surface we can make no progress. Until we can determine the process by which the tooth comes up it is idle to discuss more complex questions. The point I wish to bring before you and which I have succeeded in making clear, is that mechanical part of the process which is the simplest, and it is the part that has been ignored. That there is a mechanical force there can be no doubt in the mind of any dentist who has seen a tooth pressing upon the gum before eruption. It has been urged that the tooth came up simply because the subjacent tissues are removed; but that idea would be dismissed after close observation.

In regard to a corroborative point, I ventured in the paper to touch upon pathological conditions, and I can assure you that since I have worked out this theory, now some years ago, I have met with no pathological condition that has caused the slightest doubt in my mind as to the applicability of the theory. The point

that the president mentioned, and which would strongly confirm the view, is that in the case of the sixth-year molar in which the pulp was prematurely destroyed one finds afterwards that that tooth does not come up properly into line as teeth in which the pulps have not been destroyed, and when it does it is not accompanied by any corresponding growth of the alveolaris; that is to say, there is slight extrusion, but not sufficient extrusion to bring it into occlusion with the opposing tooth.

Dr. Rhein.—The Chairman, like the old woman getting in the last word, wants to add one point to Mr. Constant's view of corroboration of the removal of the tissue not being sufficient to bring up the tooth. It is the occurrence that we have all seen so often, the premature lancing of deciduous teeth and the reformation of scar tissue even though the lancing is done in the most thorough manner. I simply mention this as a corroborative point and one which is conclusively clear.

(To be continued.)

MASSACHUSETTS DENTAL SOCIETY.

THE thirty-ninth annual meeting of the Massachusetts Dental Society was held at the Massachusetts Charitable Mechanic Association Building, Boston, Mass., June 3 and 4, 1903, President Andrew J. Flanagan, of Springfield, Mass., in the chair.

President Flanagan.—I have great pleasure in introducing to you Dr. A. G. Minshall, of Northampton, who will read a paper entitled "The Influence of Diseases of the Air-Passages on the Teeth."

(For Dr. Minshall's paper, see page 670.)

DISCUSSION.

T. Morris Strong, M.D., Boston.—The concise paper which Dr. Minshall has just presented to the society leaves very little, if anything, to do except to commend it. I have often wished the positions were reversed and we had more dentists before our medical society instead of having physicians before the dental society, because, as a matter of fact, it is the family physician who is

responsible for the continuation of a large part of these troubles. It is true there are men who will tell the parents, "Leave it alone, the child will grow out of it." Now, that is criminal advice, I do not care who gives it, and in this day, with the education that is going on in the two schools together, side by side, no man ought to give such advice as that. The parent will come in and say, "Well, doctor, what about the treatment in this case; will not medicine do something?" And my answer usually is that many of these conditions will disappear in time in certain cases. Whether they disappear on account of medicine or without any regard to the medicine, we do not know, but while they are disappearing they leave traces behind them which will never disappear, as in cases which have already been referred to by the essayist, in the alignment of the teeth, the general effect upon nutrition, the consequent decay of the constituents of the teeth, and the influence even on the respiratory tract, leaving the narrow jaw, the pigeon-breast, and the thousand and one ailments which follow obstructed nasal respiration. They do not, however, always disappear, for we will find the hypertrophied Luschka tonsil, for instance, in adults. I have removed them in persons between thirty-five and forty years of age where they were causing local trouble and interfering with respiration, so it does not necessarily follow that they will disappear.

Again we have two sources of trouble that we have to look out for. If the adenoids are present before the second dentition, and are removed, the trouble will be comparatively slight. A great many persons with the adenoids have no trouble with the shape of the jaw or the alignment of it, but a large proportion of the cases with adenoids that come to us in our clinics do have destructive conditions of the teeth themselves. How large the proportion is I am not prepared to say; I only know I have to do a great deal of talking to the patients to awaken them to the necessity of doing something for the teeth, and it rather surprised a great many of them even to-day to learn that anything can be done for the teeth so early; they think they should let them come out and others take their places. There again the family physician is at fault in not causing the patient to look out for the teeth. Of course, later, when they have perhaps escaped the attention of the family physician, they do come to you, and the application to make, from the information the essayist has given us, is that when these cases come to you you will be prepared to recognize the conditions and

make the requisite examination. If they have been attended to you can go ahead with your direct special work, but first know whether they are there or not, and if they are still present remove them yourselves if you so desire. It is not a difficult operation. Of course, as you all know, it is a little bit bloody for a few minutes, but if you do not want to do it yourself, refer them back to the family physician, as a matter of courtesy perhaps, or to the specialist in this particular line of work. While they are there they do make trouble without any doubt. The adenoids, perhaps, are not the whole trouble, but they are the basis of it and they are there early in life; they are there at three months of age, and sometimes earlier. The young child comes along, has suffering respiration, cannot nurse, etc., and if you get your finger in the back of the throat you will find more or less of this tissue, and breaking it down gives relief to the nursing babe at once. But when these cases present, you should know whether they are there, and my point is that it is for you to consider and know this condition.

George F. Eames, M.D., D.D.S., Boston.—I was very glad to hear reference made to the importance of the physician and the stomatologist coming together in meeting and discussing on common ground matters of medicine and dentistry. At the recent meeting of the American Medical Association, at New Orleans, action was taken which admits to full standing any graduate of a reputable dental college who is approved by the officers of the Section and receives a sufficient vote. As chairman of the Section on Stomatology, I most cordially invite you to attend upon the next meeting and become members of that Section. The meeting is at Atlantic City, easily reached and a delightful place in which to spend a few days.

The subject is a very important one, and has been very ably handled and discussed. I read a paper bearing on this subject in Baltimore in 1895, before the American Medical Association. I shall be glad to furnish any one with reprints of it. My views on this question are therein expressed in detail. The occasion of irregularities of the arch and teeth seem, from my point of view, to come not so much as a result of breathing through the mouth as the result of a general condition that coexists with mouth-breathing. I made some experiments at one time to show the pressure of the muscles of the mouth against the teeth when the mouth is open, as in mouth-breathing, and according to those tests there is prac-

tically no pressure made. This is in harmony with the anatomy of the parts. I do not believe that in mouth-breathing, in nine-tenths of the cases, the mouth is so widely open that the muscles involved are put upon the stretch so that pressure is brought to bear on the teeth. It is usually in sleep that the mouth is most widely open, and even then the relaxation of sleep allows the mouth to drop, and no force is exercised.

But I do believe, as the essayist has remarked, and which seems to be demonstrated, that obstruction coexists with the loss of development, for obstruction means a loss of function of any organ, and that tends to atrophy and waste of that organ.

It seems to me that the irregularities and other evils attendant upon adenoid growth are due in a considerable degree to a lack of nutrition, and that the high arch is not in reality a high arch, but apparently so; it is narrow rather than high, and, being narrow, appears to be high.

Murdock C. Smith, D.D.S., M.D., D.M.D., Lynn.—Locality has a good deal to do with diseases of the air-passages. What would be considered good treatment in one locality would not do in another; patients living on the high dry hills of the western part of the State require different treatment to those living near the marshes along the sea-coast. A good deal of our trouble comes from patients who have consulted Boston practitioners, or physicians who were educated south of New York, who told them so and so. That may be all right for Boston or the South, but it will not do for Lynn.

In our work we get very little nasal obstruction in children; it is almost always adenoids; after puberty there may be a little deviation of the septum. If the adenoids are removed early in life it obviates the necessity of doing anything with the septum.

One of the best things a child can do who has difficulty in breathing is to push the little finger well up into the nose, thus enlarging the anterior cavity.

In my experience I have found that where there is deformity of the mouth due to trouble in the nose the mouth is of a different shape to where it is due to adenoids. Here are some casts of deformed mouths, and I will try to demonstrate the difference just referred to. Where it is due to adenoids there is seldom any lack of bony structure. Here (exhibiting cast) is a case where there is plenty of bone in the upper jaw, but it is in the wrong place. In young children with decayed temporary teeth always look for adenoids.

About puberty, when the arch is narrow, as shown by this cast (exhibiting cast), a good deal can be done, if there is not chronic hypertrophy of the turbinates, by widening the arch. It is no uncommon thing to widen the arch one-half inch, and most of the width comes in the median line, and it is not unreasonable to think that half of that distance is in the nasal fossa, making one-eighth inch on either side that would take the turbinates away from the septum enough to give room for good breathing.

Some of the Boston men teach that the antrum may be infected from the nasal cavity, or any of the neighboring cavities, and that in turn the antrum may infect the teeth so that diseases of the teeth may be secondary to diseases of the antrum. We can all agree that infection can spread from one sinus to another, but when it comes to infection from the antrum causing trouble with the teeth, it looks like an utter anatomical impossibility. Where the two diseases exist, if we look far enough back, we will find that in every case the disease started in the teeth, an alveolar abscess having started at the apex of the tooth and broken in the line of least resistance into the antrum.

Concerning the remarks of the gentleman who opened the discussion, that we should see that an operation had been or should be performed to remove the adenoids, it is not sufficient; make sure that they are removed. Unfortunately, they recur after some operators.

If the second gentleman that responded to the paper would take into consideration the action of the tongue, he would be better able to account for abnormal position of some of the teeth. The tongue has more to do with the alignment of the teeth than any other organ. When it is pushed well forward into the mouth, as in the act of running, to make room in the pharynx, it brings a tremendous pressure on the teeth; this is a point that is overlooked by both dentists and specialists.

(Exhibiting cast.) Here is a case of deformity due to adenoids that came on in the space of about one year in a boy of about fourteen years of age. The mouth was kept open all the time, and after the eruption of the second molars they kept on growing, and now there is no occlusion except on the molars.

(Exhibiting cast.) Here is a condition that it would be well to notice. Where you find the anterior teeth slightly separated and incrusted with tartar, and the only occlusion being on the first

molars, you will find a child of rather low mental condition. In this case an operation for adenoids was recommended. Being the only grandson in the family, they would not consent. In a few years his mental condition became very poor, and he was taken to a specialist for feeble-minded children, who immediately recommended removal of the adenoids, and that was all the treatment he received. He went back to school and was able to keep up with the school-work for a year and then gradually failed. At one time he had tonsils which touched in the median line for fully three inches.

(Exhibiting cast.) Here is a case that is due to faulty breathing. In this case there is lack of bony growth, and it is a very rare case.

(Exhibiting cast.) Here is another case, a male, aged twenty-four; teeth worn away fully one-sixteenth of an inch; arch broad and well shaped; nasal obstruction. This abrasion is due largely to his efforts to keep the mouth closed to force air through the nose.

(Exhibiting cast.) A female, aged fourteen, with a deformity due to nasal obstruction, one side hypertrophied turbinate and the other a polypus; a good width to the arch.

In all these cases of narrow jaws you will find that adenoids, and adenoids only, are the cause of the trouble, and the sooner they are removed the better for your patient.

Dr. Minshall (closing).—I am sorry there was not more antagonistic criticism, so that one could have more to discuss, but there seemed to be a unanimity of opinion, at any rate, on the advisability of removing the adenoids and as to the effect they produce upon the teeth. The way they produce that effect is somewhat obscure.

Dr. Eames spoke of the deformity of the jaw, the narrowing of the high arch, etc., as having been due to the pressure of the muscles on the side. I did not put that as a factor myself, though I have heard it spoken of in that way, but you will also have to take into account the effect of atmospheric pressure; at first thought one would say that the pressure in the nose and mouth were equal, but that is not so, because the air in the nose when obstructed is more or less stagnant, and that in the mouth is not; in fact, there is a decided increase of pressure there from the strained inspiring efforts as producing a separate condition. And that is a very important fact.

Dr. Smith spoke of nasal obstruction from adenoids. I did not

mean to distinguish those two at all. I think that nasal obstruction as caused by adenoids produces the same effect on the jaw as when due to other conditions. In many cases the passages have been entirely blocked by them. The effect of nasal obstruction, whether it is caused by polypus, hypertrophy, or by adenoids, is essentially the same.

The only possible additional factor which could arise in the case of adenoids is that sometimes the adenoids themselves, by their pressure on surrounding structures, diminish nutrition and the blood-supply of the bone while they are growing.

With regard to arching and narrowness, I cannot see that the breadth of the jaw is unaltered. I think in these high-arched palates you undoubtedly find a diminution of the distance there ought to be between the alveoli and that that has affected the palate, because in many of these cases you find the nasal septum bent over to one side, showing there is not sufficient room for proper growth owing to pressure from below; and the only reason that will give rise to that would be a higher elevation of the palate than normal.

We will probably all agree that the dentist and the physician should work together in these cases, and the result both to the physician and the dentist will be much more satisfactory than when these conditions are rectified before extensive changes in the bones have taken place.

(To be continued.)

ACADEMY OF STOMATOLOGY.

A REGULAR meeting of the Academy of Stomatology of Philadelphia was held at its rooms, 1731 Chestnut Street, on the evening of Tuesday, February 24, 1903, the President, Dr. R. Hamill D. Swing, in the chair.

A paper was read by Dr. Myer L. Rhein, of New York, entitled "The Technique of Approximal Restorations with Gold in Posterior Teeth."

(For Dr. Rhein's paper, see page 652.)

A paper was read by Dr. A. C. Eglin, of Philadelphia, entitled "The Removable Bridge as a Conservator of Teeth."

(For Dr. Eglin's paper, see page 663.)

DISCUSSION ON DR. RHEIN'S PAPER.

Dr. S. H. Guilford.—I am sure we have all been very highly pleased and edified by Dr. Rhein's paper. I can do nothing but commend it in its general aspects. He has told us a great deal that is entirely true. While the general outline is similar to what most of us practice, there are some points in which I cannot exactly agree with him.

I have here a plaster tooth model with a cavity, somewhat as he described, filled with modelling clay. As to the preparation of the cavity, Dr. Rhein took a position intermediate between those of Webb and Black. Dr. Webb prepared the cervical margin of the cavity so as to conform to the natural cavity; in other words, the form naturally given by the decay; whereas, Dr. Black makes a flat cervical wall. Dr. Rhein holds to the idea of using the cervical wall to resist strain, as claimed by Dr. Black. Whatever the form of the cervical wall when the filling is carried over and anchored on the occlusal surface, no amount of strain is going to make it revolve or move from its place. A filling of this kind is held in place by the shape of the cavity. In the model I have made the cervical wall a cross between a regular curve and a flat surface, but not entirely flat like Black's. I prepare the side walls in such a way as not to depend upon them for anchorage. By the use of the matrix we avoid the necessity for grooves in the lateral walls.

If we pack gold, keeping it highest in the centre, we have an acute or, at least, a right angle formed by the gold and the wall, whereas, we want obtuse angles. In order to obtain an obtuse angle, I carry the filling along the sides a little in advance of the centre. You may say that this is apt to draw it away from the sides, but I have not found it so. I object to cutting cavities of this type with parallel walls, because it entails the loss of too much good tooth-structure.

Dr. Rhein spoke of the abuse of the matrix. According to his statement I have been a user of the matrix for many years, because in most compound cavities I can apply it for the filling of the cavity and for the temporary support of the filling. In using the matrix we can tighten or loosen it to any extent, and thus contour the filling to a greater or less degree at any point.

To assist in starting the filling Dr. Black and Dr. Johnson make deep undercuts at the linguo-cervico-axial and the bucco-

cervico-axial angles, and pack the gold until the entire cervical wall is covered. Dr. Rhein places a little cement, then adds gold to that. There may be no objection to cement, but personally I prefer to have a gold filling throughout. If phosphate of zinc is needed to protect the sensitive part of the tooth, I should use it, but as anchorage I do not need it.

Dr. Rhein spoke of the wall of the enamel along the cervical margin. It is said that there decay recurs most frequently. By his plan,—starting the gold at one side with a little cement and carrying it across,—I do not think he is as certain of protecting that wall as he thinks he is. The edge should be covered absolutely and the gold malleted down. This is easily done by inserting a pellet of gold with tweezers between the matrix and the cervical margin and turning it over the margin. You can place as many pieces of gold as necessary in this way, packing them down as you go. When we get the gold down in perfect contact with the margin the flexible matrix will yield, and in that way all margins are made more than full. There would be no more objection to filling one portion at a time than there would be to placing the matrix and removing it. The gold can be packed in a reasonable time, and when the cavity is filled you simply take a small knife or bistoury and cut off the gold until you have the margins entirely clear. After this you smooth them with a Rhein's trimmer and finish with the polishing strip.

I have used the electric mallet for over thirty years. I had one of the first made by Dr. Bonwill, and many others since. I do not think I have introduced a filling in years in which I have not used it part of the time, except possibly when demonstrating the use of non-cohesive gold.

Dr. Ralph B. Reitz, of New York.—In most things operative Dr. Rhein and I are in accord. I have always used the Bonwill mechanical mallet, however, and believe that practically the same results can be obtained with it and with less danger of getting out of repair. If the work be well done, it matters little what mallet is used. I am always willing to take off my hat and make my best bow to such work as Dr. Rhein, Dr. Gardiner, and Dr. Keffer do with the electric mallet. These are mentioned because fillings in my own mouth done by these men with the electric mallet have stood the test. While I rely mainly on the No. 3 Bonwill mechanical mallet, I find occasional use for the Bosworth universal mallet, which is

a right-angle mallet. By its use good condensation can be produced over distal walls without the free cutting necessary for any straight mallet. The cutting required in some of these cases to secure free access for the straight mallet is little short of mutilation, and to my mind is uncalled for. I have never cut a pit for starting a filling since I have been in practice. When the shape of the cavity does not lend itself readily to the secure anchoring of the first pieces of gold, I use cement as described by Dr. Rhein, not waiting for it to become thoroughly hard, but go right ahead with my malleting. The cervical margin gives me very little trouble, unless it is near to or under the gum, when I follow the plan outlined by Dr. Guilford. The edges are burnished with springy instruments which I keep expressly for this purpose. It has always been my custom to take whatever time is necessary, regardless of the much shorter time which might be required by another to do the same operation. I do not believe I could be content in filling teeth otherwise.

Dr. H. A. Clement.—I do not think it is necessary for a man to tie himself down to any particular mallet. I seldom use the matrix, but when I do I think I get better margins. The man who uses the electric mallet can do the work much more easily, and the gold is much better condensed. Some of the most beautiful work is done by the use of the automatic mallet. I have been using the electric mallet for eighteen years in conjunction with the automatic mallet, hand-pressure, or anything else which meets the indication. When a patient does not like the electric mallet I use something else, but I use the electric mallet when I can.

Dr. F. D. Gardiner.—I wish to thank Dr. Rhein very much for what he has given us. The paper is exactly along the lines upon which I hoped he would write. I agree with him in all the essential particulars. I shape my cavities perhaps a little differently, but I work along the same general methods, because I believe the principle is correct. I believe that a flat cervical wall will detain much better than a rounded one. We should not lose sight of the fact that if a filling has a proper mechanical seat, the lateral walls are relieved of much of the strain that would otherwise be imposed upon them. I think these lateral walls should always be bevelled outward instead of at right angles. Like Dr. Guilford, I would prefer to have the walls of the cavities bevelled so as to give greater protection to the walls of the tooth without weakening. If you

bevel the cavity walls outward, it is not necessary to enlarge the cavity in the dentine to so great an extent. It is easier on these lateral walls to insert the filling if these walls are perfectly straight. Otherwise I think we leave a weak occlusal margin likely to be broken away.

The result is the one thing to be borne in mind. Ideal results can be obtained after the method described by Dr. Rhein.

Dr. E. C. Rice.—There is one point I would like to bring out: I have been a careful student of Dr. Black's method, and I think it is a mistake to say that he speaks of grooves in the base of his prepared cavity. As I have understood the matter, he uses a right angle on both sides at the base of the cavity, and depends entirely upon the spreading principle of his gold. He cuts his gold in strips and places one end in one corner of the cavity and then grasps the gold again at a point at a greater distance than the width of the cavity, places that in the opposite corner, and condenses the central portion.

Dr. Charles R. Turner.—I have most heartily to commend the finishing of the cervical margin at the time that Dr. Rhein recommends that it be done. This is a most vital portion of the filling, and, in spite of the excellent trimmers which he has given us, it is quite a difficult matter to get a nice finish of the gold up to a bevelled margin at this point. I also think that the use of cohesive gold throughout the filling is much to be desired. I believe that there is no question that we may be easily deceived by the quality of the non-cohesive gold placed at this portion of the cavity. If we have a substantial foundation, such as we can get with cohesive gold, we have more reasonable expectation of long life for the filling.

Dr. James Truman.—It seems to me that we dwell too much upon men rather than upon principles. We are talking all the time of Varney, Webb, Black, Johnson, and Wedelstaedt. These men simply carried out the principles of filling teeth as they understood them. When I saw Dr. Guilford fill over the cervical wall of his model cavity, I was reminded that Dr. Townsend taught us the same thing in a little different way. There is practically nothing new in it. I cannot understand how any man can put oxyphosphate of zinc in the cavity, place a piece of gold on top of it, and call it a good mechanical piece of work. It strikes me that there is some risk in the method, as we do not know what effect the phosphate of

zinc has upon the pulp. I believe the proper mechanical method of starting a filling is that used prior to Webb, of making pits. The filling is then worked in from the very start.

The methods adopted recently with regard to extension are to my mind only partially correct. It is possible that extension may prevent, but it may do exactly the reverse of that. There are no weaker points than the cervical border where moisture is constantly present.

Dr. William Trueman.—I have never been convinced that we can make gold so thoroughly solid by any form of filling as if melted in. For that reason I object to stopping in the midst of a filling. I think it always leaves a weak union. I look upon Webb as a most thorough operator and as a most thorough condenser of gold. He filled two front teeth of mine. After a time one broke, and the gold was found to be one-eighth of an inch thick. One gave way in three years, and another in ten. I judge not only from the work, but from the fact that it took him a week to fill four teeth, and on two days he worked from half-past eight o'clock in the morning until five in the afternoon. The gold was one homogeneous mass and as solid as if passed through a rolling-mill. That, I think, is not properly considered in estimating the tensile strength of a gold filling. When it is packed in with an electric mallet it is under strain. I am pleased to note in Dr. Rhein's description of the method of filling that he continues the bevel from the bottom to the top of the cavities, and that he does not depend entirely upon anchorage in occlusal surfaces, because, as more stress is brought to bear upon that point, it will stretch out. I have seen a number of contour fillings break off, probably because the gold was packed towards the buccal wall. There are points in the paper that all should value, while, at the same time, we may not adopt all of them.

Dr. Rhein (closing).—I thank you for the kind consideration you have accorded such a worn subject as this. I regret that no one has seen fit to take up the defence of a combination of cohesive and non-cohesive filling for such cavities as these, a method that, so far as I can judge from the writings in dentistry, seems to be the most prominent one in use through the West and Northwest for rapidly restoring the contour surfaces of posterior teeth.

I have a short sentence in my paper in which I say the method I speak of is a delineation of one method of doing this work, and naturally speak of my own method. I recognize, as every profes-

sional man must, that all work of this kind is done by all kinds of methods, and I should not attempt to criticise the methods of men eminently successful in their work, but I do claim that the principles I have enunciated make it possible to insert fillings in the quickest, easiest manner, with less strain upon the patient and operator, while producing more enduring results than are possible by any other method. I commend it to young men who have not become wedded to any form of practice.

From what has been said regarding the shape of the cavity, it seems to me that I have not been thoroughly understood, and that Black's ideas have not been thoroughly comprehended. Dr. Guilford, in speaking of cavity preparations, certainly does not recognize the points I attempted to make clear. I agree most heartily with Dr. Gardiner when he says that the preparation of the cavity, as shown by Dr. Guilford, is, in his opinion, absolutely insecure for the preservation of the walls. I tried very hard to make pertinent that while I believed in right-angle preparation of the walls from the floor of the cavity, as laid down by Black, there is an outer bevel of the margin extending around the entire outer periphery of the cavity. While the bevel is much smaller in width in some places than in others, I claim that the continuous strength of the bulk depends upon perfect protection of the enamel-rods. That was always the teaching of Webb. Black and Johnson paid little attention to this point. I recognize the great advance we have made in laying stress upon this principle of the flat nature of the dentinal floor at the cervix.

I never leave the margins parallel. The more extensive the restoration the more I diverge from parallelism, but bevel as I reach the occlusal portion in order that the gold going over that surface shall be of sufficient thickness to withstand an enormous amount of mastication. The main objection to the shaping of Dr. Guilford's cavity is that the enamel-rods are not sufficiently protected. My own belief is that one of the chief causes of the principles of extreme extension has been due to this lack of bevelling the margins. Drs. Guilford and Truman have spoken in criticism of the method of starting the filling. After the use of cement for eighteen years I claim that it is beyond criticism. The amount of cement is about that held on the point of a pin. One of the most valuable points claimed for my work is the thin film of cement around the surface of the dentinal wall. The cement should never

extend upon the margins of the cavity, and should be of so small an amount that it would possess no detrimental action and yet be sufficient to cement a minute piece of gold. Dr. Guilford may have the skill to finish his margins after filling, but after filling to the occlusal portion I can never finish the concavity with the same ease and dexterity as when the cavity is only one-half or three-quarters filled, or as I can do it when there is no tooth adjacent.

The clinical history given by Dr. William Trueman of the splitting of his tooth to my mind only proves the truth of the teachings of Webb in this respect and the remarks which I made to-night. We all know that the exceptions prove the rule in everything.

When in finishing the filling of a tooth at a subsequent sitting I have found that the gold would not unite, it was proof to me that there was some imperfection in the previous manipulations, and it is much better for the patient that I made the discovery after having filled the third of the tooth than if the work were completed and then a flaw discovered. I challenge Dr. Trueman or any gentleman to separate at the point of cohesion a filling put in in the manner I have described. The whole principle rests upon the perfect welding together of the gold as taught by Webb.

Dr. Reitz has brought with him a strip of gold to prove what I believe to be a fact,—that its tensile strength is greater than the melted ingot. With the hand-pressure we can weld the gold together as perfectly as with the electric mallet. I do not believe that Dr. Black and Dr. Johnson are responsible for some of the statements we heard regarding their methods of shaping and filling cavities.

With all due respect to Professor Truman, and with all regard that I have for him, I take exception to the statement that we have not progressed in work of this nature in the last twenty-five years. Before the use of cohesive foil and the time he speaks of they knew how to save teeth with gold fillings. Such things Webb speaks of, but we have no evidence of any ability to produce such contour restoration as seen to-day.

Dr. James Truman.—I would just like to say a word in regard to what Dr. Rhein has stated. One would naturally suppose that Webb introduced cohesive gold. This, however, was used long before Webb came on the platform. When I was a teacher of operative dentistry Dr. Webb attended my lectures, although graduated from another school. I taught at that time cohesive gold from the begin-

ning to the ending. That was long before Webb's reputation was made. What I meant to say is that the principle of filling teeth was well understood, not only prior to Webb, but, as well, up to the present time. I do not see that there has been any great advance in the operation of filling teeth for the last twenty-five years.

DISCUSSION ON DR. EGLIN'S PAPER.

Dr. E. C. Kirk.—This matter of crown- and bridge-work has become so definitely specialized, and in ways quite apart from the lines of my own work, that I hardly feel competent to speak on the subject. I have, however, been very much impressed with the exhibition in one particular,—the element of conservatism. I think every dentist except the man who has gone wild on the subject of bridge-work must have recoiled from the almost wholesale sacrifice of sound teeth. From the little knowledge I have on the subject I concur thoroughly in the belief that the natural crown as a support for bridge-work is better than anything else, because with it we escape the irritation of peridental membrane by ill-fitting bands. From a mechanical stand-point it is evident that there is also less destruction of the tooth-structure. It seems characteristic of all new methods that they are crude, and that after long experience and application we eliminate these crudities and reach something like a rational working-plan. My impression is that the method advocated by the essayist is a step towards legitimate use of that which is a good thing in its place.

Dr. A. P. Fellows.—I agree with the essayist that we ought to have a great deal more conservatism in the matter of bridge-work, and one of the ways of being conservative is to save crowns. In this method, while there are strong points, there may also be some weak ones. In the lower bridge shown the placing of a spur upon one of the adjoining teeth would, I think, cause wear of the enamel, and in course of time would promote decay and necessitate crowning. The essayist speaks of the bridge being in use for two or three years. I do not think a patient would care to go to the trouble of having a bridge put in to last only two or three years. I believe that if the molar and cuspid had been crowned in the ordinary way, and fixed firmly, that it would last three times as long, without any trouble at all. I believe that under ordinary conditions a tooth well crowned will last longer than that same tooth if it were not crowned. For instance, in one piece shown there is a bicuspid root which

seems to be a very serviceable root, indeed, but it will not support three crowns well even though it has a support on each of the adjoining teeth. It is a question to my mind whether that is really a proper way of handling that kind of a case. I believe that we ought to get all possible utility out of work without losing the crown or endangering the piece of work, but if necessary to the solidity of the work, I believe it is a wise thing to sacrifice that crown without hesitation. Still due consideration should be given before a crown is cut away. I believe the greater number of crown-workers are very careful to get as good results as they can.

Dr. H. A. Clemment.—I see no advantage in removable bridge-work, but rather a disadvantage. I have never seen a satisfactory removable bridge. I cannot understand how it is possible to keep a pin in the root without some moisture, which means decay, so that you must crown later. I think a patient is apt not to take good care of a removable bridge, and must come back to the dentist to have it put back again. If the tooth is filled so that when the pin is put in there is a slight space left at the distal side, so that it can be thoroughly cleaned, there will be no need of a removable bridge.

In the lower jaw back of the second bicuspid I only use the occlusal surfaces. When it becomes necessary to sacrifice a crown to give a patient comfort for a number of years, I never hesitate to do it. I act upon this principle from having had such work done in my own mouth. I have known of cases which have been satisfactory for a number of years and free from accumulations of food. This I think is more satisfactory than carrying a removable bridge around in the pocket.

Dr. Eglin (closing).—I do not think Dr. Fellows quite understood my remarks regarding the spur. This rests in the gold filling, and if the gold filling is properly put in there is no reason for further decay at that point. The doctor assumes that the bridge which has been in for two years is now ready to come out, but it is as good to-day as when put in, and looks as if it might be good for several years to come.

In answer to Dr. Clemment about putting in the tube, it is cemented in, and after this the needle around which the tube has been made is inserted and a gold filling put in. Any portion of the enamel with which the split pin might come into contact would then be covered with gold, and there is therefore no question of a leak.

The idea of carrying a removable bridge in the pocket should not condemn the method. It may condemn the work, but not the method.

OTTO E. INGLIS,
Editor Academy of Stomatology.

Editorial.

ASHEVILLE, 1903.

THE conventions that met at this justly celebrated mountain resort have closed their labors, and it becomes the editor's duty to sum up the results.

Before proceeding to consider their work it may be well to express a thought regarding the place of meeting. This "Land of the Sky," as it is lovingly called by those who know it best, is situated two thousand feet above sea level, and yet Asheville seems to be, and is, lower than any part of the surrounding country, and, in fact, while upon an elevated plateau, it is apparently in a valley surrounded by majestic mountains, range upon range coming into vision as the mists of cloud-land clear away from their summits. Other sections of our diversified landscape scenery in America may furnish—do furnish—mountains of greater altitude, but to those familiar with Rocky Mountain scenery there is nothing fairer or more inspiring than these elevations that surround and make Asheville what it is to-day,—the most beautiful health resort, not excepting Colorado, in the United States.

The conventions were called to meet at the "Battery Park" Hotel. This house is situated on what is politely called a hill, but to those whose lot was cast for a week in Asheville proper, and were forced to ascend this three times a day, the hill assumed the proportions of a mountain, and became a serious problem to those unused to mountain climbing. To those who were fortunate in securing comfortable rooms at the hotel the splendid view of this land of mountains amply repaid them for the inconveniences usual at convention hotels. Asheville, the town, is similar to most other towns,—full of active life and with a promise of growth into

a beautiful city. At present it seems in a condition of transformation from the village to the city, containing much of both in general make-up. George W. Vanderbilt has been an inspiration to the people of Asheville. Through his wonderful transformation of his mountain estate into a dream of beauty he has brought a direct and positive influence upon the inhabitants and a pleasure to the artistic minds visiting it. With his millions expended he has made Asheville, and the latter has nobly responded.

The several conventions were well attended. The National Association of Dental Faculties had delegations from nearly its entire list of membership, which means from New England to California. The National Association of Dental Examiners was well attended. Both of these organizations met at the same time and in advance of the National Dental Association. The writer alludes, in another place, to one matter connected with the "Examiners." It is to be hoped that its further proceedings were more in consonance with dental progress than this, but the writer was not made familiar with its general work, and hence is unable to express any opinion as to its value.

The Association of Faculties confined its labor, as usual, to general legislation and to the discussion of proposed plans to advance dental educational methods. In a body of this kind individuality is a prominent trait, and this generally results in much friction, but this year there was less of this than usual.

The most prominent and, to many, unpleasant feature was the resignation of the Dental Department of Harvard University. This school claimed that, inasmuch as it proposed to increase its preliminary entrance standard upon all lines of work and in advance of any of the departments of universities in membership in the "Faculties," it was entitled to a continuance of the present three years' course. While it did not expect to reach the A.B. degree for some years, the aim of the school was ultimately to accomplish this as a preliminary requirement. With this high standard, present and prospective, Harvard claimed that it should not be required to extend its course to four years. This claim was given careful consideration in committee, but it was evident that to concede this meant a practical abandonment of the four years' course decided upon several years ago. This advance had only been secured through years of constant educational effort, and to accept Harvard's claim meant a retrograde to original conditions. Dental

colleges have learned, through serious experience, that it is impossible to make a satisfactory dentist in three years, with the additional scientific requirements imposed in the present curriculum. The request of Harvard was, therefore, respectfully declined by vote in the main body, and thereupon this school presented its resignation.

The writer feels that this action of Harvard was not well considered. As a school it may possibly be able to stand alone, but is not something due the men who have struggled for years to make dental education in this country worthy the respect of university thought and traditions? It seems to the writer that when the better class of colleges have thus, amid untold difficulties, reached a commanding position, they should not have been requested by one of our greatest schools of learning to retrace their steps. That they were not willing to do this is to their credit, but, at the same time, there was a universal feeling of regret that an earnest and influential member of the organization should have felt compelled to withdraw at the moment the goal, long worked for, had been attained.

The dissatisfaction which has long been felt with many of the officials of the Faculties resulted in a revolution upon the election of officers. The Foreign Relations Committee was the centre of attack, but all suffered in common. All of the Foreign Relations Committee, with the exception of one, are new men. This committee has for a long period been a disturbing factor in the "Faculties" through its objectionable methods, and it is to be hoped that the new committee will profit by the lesson and not attempt the impossible.

The National Dental Association met at the time appointed, with Dr. Noel, of Nashville, in the chair. This gentleman presided with dignity, and his address was full of suggestions which, if carried out, should advance the character of the National Association. It is, however, evident to the thoughtful mind that our national body is degenerating, being infected with the commercialism of the age. The papers read were much in this direction. The amount of time expended on inlay filling was an inexcusable waste, as that subject has been threshed out beyond the possibility of extended interest. Lantern exhibits are proper, and within certain limitations have a value in teaching, but they are a bore of great magnitude in a dental convention. They necessarily

require much time, and the man with his pointing rod is more intent describing his picture than he is in discussing the scientific side of the question he attempts to illustrate. The result is that those not particularly interested in this phase of dental work are barred out. There was a time in the history of the old "American" when certain parties monopolized entire evenings with matter mainly interesting to themselves. Some may remember the antagonisms that this action aroused and the final adoption of a resolution preventing this abuse in the future. We have it now in the National under another, but an equally objectionable, form.

What is needed is a more thorough systematizing of the work. Why should the members be forced to listen to three papers on inlay fillings? One certainly ought to cover the subject and permit a fruitful discussion from those directly interested. It would seem as though the plan of section meetings would be forced upon this body, unsatisfactory as this method is to many. The sections at present existing do not meet the requirements. At the present meeting there was very little time given for the exchange of views and less devoted to truly scientific subjects. This from a practical stand-point may not be a subject for regret, but all classes of mind need to be fed at such a gathering. The complaint was widely made that there was no result from the national body at all commensurate with the long distance travel and fatigue consequent upon that and the heat of the season. The writer has for years seen the same result, and it will continue until the faulty management is improved and a more propitious season for holding meetings is adopted. It is to be hoped that this will come in the very near future.

This article cannot be closed without an expression of gratification with the efforts of the local committee to make this meeting socially an enjoyable occasion. Nothing was spared on their part to make it one to be remembered, and that they succeeded in giving pleasure to many must be acknowledged with grateful thanks.

The conventions of 1903 have passed into history. It is our duty individually and collectively to now take up anew the work of preparing for the International Dental Congress of 1904, at St. Louis, and make it an assured success.

A STEP BACKWARD.

THE National Association of Dental Examiners, at its recent meeting at Asheville, N. C., made a radical change in its methods of dealing with the dental colleges of the United States. Heretofore this national body had a list prepared yearly of so-called accepted dental colleges. This was made up of the colleges in membership with the Association of Faculties. This was supposed to be a guide for the State boards, and was so recognized by them. Hence the graduates of those dental colleges not upon the list were refused recognition outside of the State in which the college was situated. Several instances are on record where colleges attempted to act independently of this organization and the "Faculties," with an invariably disastrous result. So universally has this resulted that every effort has been made to be taken back in the Association of Faculties, which meant acceptance by the "Examiners" and a relisting of the college.

Now all this has been changed, if the writer understands the recent action of this body. The applicant for license from State boards may come from a college having three years, four years, or no years at all, and be examined, where the laws of the States will permit it. The National Association of Dental Examiners simply demands that he shall make a certain advanced per cent. in his examination.

If this is not going back to primitive methods, then the writer has misunderstood the drift of this action and stands ready to be corrected. It repudiates, in effect, at least, all college education, and is based on the Massachusetts State law, which declares: "Sec. 4. All persons who shall have attained the age of twenty-one years . . . may appear before said board at any of its regular meetings and be examined with reference to their knowledge and skill in dentistry and dental surgery, etc." If satisfactory, the certificate is issued regardless of a diploma. This may be all well in theory, and in isolated instances may be correct in practice, but if followed out to its logical conclusion it would do away with all college and school work, for instances are constantly being recorded of self-education, so-called, in all lines of work. It is not believed, however, that there was ever an individual, thus self-

educated, that did not regret to the day of his death that he had failed to have had the experience of college training.

The writer is not pessimistic and ready to believe that the effect of this action of the Association of Examiners will, in the end, destroy dental colleges. These will live long after the National and State boards have been forgotten, but the discouraging effect cannot be minimized.

The National Association of Examiners is congratulating itself that its membership has taken an advanced step. It is believed by the writer that this means, in theory, at least, a relapse into the methods in vogue before the Association of Faculties was organized. It, in fact, nullifies the good that the Association hoped to accomplish as the result of the four years' course. Indeed, it is questionable whether under this ruling a college could not continue the present three years'. It would be liable to expulsion from the organization, but that would not materially affect its interests so long as it could bring its students up to the per cent. demanded.

For years the State boards and National Association of Dental Examiners have assumed that it has been through their combined efforts that dentistry has been forced to advance to its present high position. The writer has invariably asserted that this claim was not founded upon any historical evidence; that the advance has been a necessary evolution and made by the colleges, and would have taken place sooner or later in the natural order of progress without their aid. Now, when dental education sinks to a lower level in this country, the legitimate result of this 1903 action, they will probably charge the retrograde to the colleges and not to their unwise action. A step forward is always in order, but a step backward is sure to result in disaster, and this latter the National Association of Dental Examiners has taken. It is to be hoped that the dental colleges are so firmly based on the best educational foundation that they will not for a moment listen to the indirect temptation held out to them by this body, but will advance, firmly united, regardless of paper resolutions of boards, State or national.

Miscellany.

HEMORRHAGIC DIATHESIS CONTROLLED BY CALCIUM CHLORIDE.—While well aware that the above caption invites criticism, it has been selected as likely to attract attention to a case illustrating the value of this drug as a styptic published in the *British Journal of Dental Science*, vol. xlv., May 15, 1903, page 461, and credited to the *Lancet*. Cases of hemorrhage, when this peculiar condition exists, are always dangerous; they call for prompt and reliable treatment; therefore anything which promises greater usefulness than the usual stock remedies cannot be too generally known.

The case is reported by Mr. T. Wilson Parry, M.A., M.B. (Cantab.). He was called in the early morning of September 4 to a boy aged seven years and four months, who was bleeding from the mouth. The blood was seen to be welling up from a little slit or cavity in the gum between the left lower first permanent molar and the temporary molar immediately in front of it, the latter being decayed on its distal surface. Both of these teeth were firm. There was a rapid oozing from the cleft, and evidence that there had been a continuous bleeding through the night. Without relating all the details, it is sufficient to say that the bleeding was so profuse as to bring the patient near to the danger point. During four days attempts to arrest this hemorrhage were persistently made; alum, tannic acid, turpentine, perchloride of iron, and adrenalin chloride being used without relief. Mr. Bilton Pollard, who was called in consultation, after hearing what had been done, suggested a trial of calcium chloride. A small pledget of cotton was steeped in a solution of this (thirty grains to the ounce) and inserted in the little cavity in the gum from which the blood came. This was shortly replaced by another, and yet again by several others, until the removed plug showed no blood-stain whatever. A final plug was, of course, left *in situ*. The cessation of bleeding was now complete. The nurse in attendance was then instructed to moisten the inserted plug with some fresh solution every twenty minutes. This was continued from eight to ten o'clock P.M., when the boy fell asleep and did not awake until six o'clock the following morn-

ing, there having been in the mean time no return whatever of the hemorrhage, notwithstanding that the plug was gone; nor did it again occur.

The family history given leaves no doubt but that it was a case of hæmophilia.

While the use of calcium chloride as a styptic is not unknown, it is safe to say that it is not generally appreciated, nor yet is it generally "put down in the books" as a valuable agent in such cases as this. Not only is it efficient and cleanly, but being non-toxic, or nearly so, gives it additional value when a styptic is called for to arrest hemorrhage in the mouth of a child. Should a portion be swallowed, it is not at all likely that the amount would exceed a reasonable dose of the drug, and, so far as being injurious, it is the very drug one would prescribe.

In concluding, he says, "It is into the hands of general practitioners that trying and anxious cases as the one recorded first fall, and it is for such as these who may be, as I myself was, unaware of the unquestionable superiority, at least in this instance, of calcium chloride as a local styptic over other styptics of more familiar name and repute, that I take the liberty of publishing this case."—W. H. T.

CELLULOID SPLINT FOR SUPPORTING LOOSE TEETH.—At a recent meeting of the New York Odontological Society Dr. M. L. Rhein demonstrated a method of using celluloid for this purpose. He first binds the teeth together with ligatures of pure silver wire about 30 gauge. To prevent this being displaced, he cements little buttons of zinc phosphate cement upon the necks of the teeth. This he covers with celluloid dissolved in acetone, which not only hides the silver wire from view, but also holds the teeth much more secure, makes the ligatures far more cleanly, and, as it hardens with a smooth surface, is much more comfortable to the patient. Acetone is a perfect solvent for celluloid, and as a solution for this purpose can be quickly made, the doctor prefers to make it fresh for each case. He directs that as much celluloid be dissolved in the acetone as it will take up. To give the solution more body, and to give it a more natural tooth-color, he adds tin oxide. It may be made of a thicker or thinner consistency to suit the case or the operator's preference. It requires a very long time to set, and

should be kept dry about an hour. By that time it assumes a cartilaginous condition, and the patient may then be dismissed, but requires more time to become quite hard. Some little experiment is needed to ascertain the proper consistency.—*Dental Cosmos*, May, 1903, page 389.

Current News.

NEW JERSEY STATE BOARD OF REGISTRATION AND EXAMINATION IN DENTISTRY.

THE State Board of Registration and Examination in Dentistry of New Jersey will hold its semiannual examination in the Assembly-room of the State-House at Trenton, N. J., on the 20th, 21st, and 22d of October, 1903.

All applicants are required to file their applications with the secretary ten days prior to the examination.

Sessions begin promptly at 9 A.M. each day.

For information in regard to examinations communicate with the secretary, Charles A. Meeker, D.D.S., 29 Fulton Street, Newark, N. J.

Fee for examination \$25.00.

CHAS. A. MEEKER,
Secretary Dental Commission.

AMERICAN SOCIETY OF ORTHODONTISTS.

THE third annual meeting of the American Society of Orthodontists will be held on December 30 and 31, 1903, and January 1, 1904, in Buffalo, N. Y.

ANNA HOPKINS,
Secretary.

ST. LOUIS, Mo.

THE
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No. 10.

Original Communications.¹

SOME BASIC PRINCIPLES IN ORTHODONTIA.²

BY EDWARD H. ANGLE, M.D., D.D.S., ST. LOUIS, MO.

MR. PRESIDENT AND MEMBERS OF THE NEW YORK INSTITUTE OF STOMATOLOGY.—It is with much pleasure that I meet with so prominent an organization to-night for the purpose of considering some phases of that important and fascinating branch of science known as orthodontia, a science pregnant with greatness, and yet so feebly taught in our colleges and so little appreciated and imperfectly practised by our profession that it still lingers on the threshold of its limitless possibilities. Indeed, it is doubtful whether its general practice up to date would not show a balance on the side of harm rather than of benefit. Yet the opportunities it affords for physically benefiting humanity are so great that all intrusted with the care of the teeth may well devote much time to its consideration. And let us not pass lightly over this phrase "physically benefiting humanity." To detect the marring effect

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Address given before The New York Institute of Stomatology, October 7, 1902.

of maloccluded teeth and cramped and diminished arches on the facial lines, often even to the extent of repulsiveness, is not difficult; but who can estimate the effect on the health and usefulness of the individual, on the breathing apparatus, on the function of mastication, and on the voice in speech and song? And these deformities are not limited merely to an occasional unfortunate, but are widely distributed and vast in numbers. Yet they all have beginnings and are all progressive. Intelligent treatment at the proper time would correct abnormal tendencies, and nature would complete the development of the dental apparatus in harmony with the requirements of utility and beauty. Truly this great subject demands our most thoughtful attention.

I shall try this evening to make clear some principles which seem to me basic, and on the intelligent comprehension and application of which depend the possibilities of successful achievement.

First, I shall hope to demonstrate to you that we must consider the dental apparatus as a whole *in each case*, together with the throat and nose and facial lines, instead of limiting our attention to local symptoms in the form of one or more crooked teeth, as has so long been the practice.

Secondly, I shall try to impress you from the orthodontist's stand-point with the value of each individual tooth and with the absolute necessity of preserving the full complement of teeth, or its equivalent, in every case. I shall try to bring conclusive evidence that the sacrifice of teeth for either the intended prevention or correction of malocclusion is not only wrong practice and fallacious teaching, but most baneful in its results. I shall further try to show that the full complement of teeth is necessary to establish the most pleasing harmony of the facial lines.

Thirdly, I shall try to prove to you that the first molars are the most important of the teeth, and that they are the first to be considered, from the orthodontist's stand-point, in both diagnosis and treatment; that we must first look to their correct adjustment instead of beginning with the incisors and ignoring the positions of the molars, or attempting to correct them last.

Fourthly, it is positively essential that each arch and the teeth of each arch shall receive at least equal care in their adjustment, the preference, if any, being given to the lower.

And lastly, I shall try to show you that fully ninety per cent.

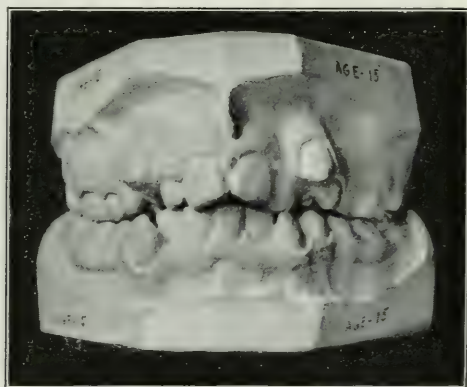
of the regulating appliances represented in our literature are constructed and operated upon incorrect principles.

I shall not have time to touch upon the etiology of malocclusion, but I feel that I should not miss this opportunity to say that I believe it is as ignorant as it is cruel to brand as degenerates those suffering from malocclusion of the teeth.

I hope I shall this evening awaken much interest, and if we do not agree on some points it will not be the first time that men have differed on the subject of orthodontia, yet I hope and believe that our differences will be honest.

The picture now upon the screen (Fig. 1) represents a type of malocclusion almost as familiar to you all as the signs on your

FIG. 1.



office doors. Again and again have you seen such a case in some of its variations. It amounts to nearly seven hundred in a thousand cases of malocclusion. It has become so common to you that few of you realize how seriously the person afflicted therewith is handicapped. The function of mastication is seriously impaired, and what would the eloquence of a Demosthenes avail a person with such teeth, for he could not enunciate one word in ten correctly: or what would an endowment of vocal gifts equal to those of Patti profit a person with vault and arch so abnormally constricted as to render the highest cultivation of the vocal chords under the best teachers of little avail? And as to its effect on the beauty of the face, no matter how beautiful the eyes, faultless the

nose, lovely the skin and complexion, or otherwise perfect harmony of proportion of the features, all is counterbalanced by this pronounced blemish. How mightily would your opinions change as to the wonderful beauty of the Venus de Milo if she should smile and reveal such shocking dental chaos. Beautiful eyes, excellent proportions of the features, even a pleasant smile,—all together cannot offset this unfortunate blemish, as is proved by the next picture (Fig. 2), but, on the contrary, I sometimes think intensifies it.

FIG. 2.



Who can estimate the effect such a blemish plays in the mental development of children so affected, especially if they have reflective, sensitive natures, as is frequently the case? Now, there was a time in the early developmental stages of this case when the irregularities were but slight and could have been easily corrected, but the parents of the child were told, as dentists have long been in the habit of telling parents, that the patient was too young for treatment, and so it progressed as countless thousands all over this city—all over this broad land—do progress into similar deformities, under the very eyes and with the advice of even the best dentists.

Let us note the progress of this type of malocclusion, tracing its development through several cases at different ages to complications equal to those just described.

But before doing so let me freshen your memories and fix in your minds, as clearly as I am able, the picture of normal occlu-

sion which is the very basis of all our efforts in orthodontia, as well as in all dentistry, and yet I am sorry to say that only a very small percentage of dentists (probably less than three per cent.) know the correct occlusion of the teeth individually or collectively. (If you doubt this, quiz a few of your dental friends on the subject.)

You will remember that the case just shown belongs to Class I. The first molars were locked in their normal mesio-distal relations at eruption, and the malocclusion limited to the teeth anterior to the first molars—principally to the incisors. Let us note the marvellous contrast in the next picture (Fig. 3), which typifies normal

FIG. 3.



occlusion and the normal relations of the occlusal planes; and we know that it means more than this, for it also means normal tongue space, normal respiration, normal balance of lip pressure and function, for without all these we could not have such ideal occlusion. This picture is one that I wish you to carry with you and compare with each and every other picture that you will see upon this screen to-night, for it represents the normal, and without a clear conception of the normal we cannot possibly have a true conception of the abnormal in occlusion. We could study and discuss this marvellous picture for a full hour, for it is very rich in graceful, artistic curves, forms, proportions, contrasts, and effects, as well as wonderful in mechanics and correlation of forces.

This normal occlusion is maintained only through the normal relations of the inclined planes of the cusps, assisted by the normal

influence of the muscles exercised externally and internally upon the crowns of the teeth.

There are two points of great importance in the occlusion that I also wish you to remember. First, the normal relations of the first molars, and second, that of the cuspids. The first determines the mesio-distal relations of both lateral halves of the arches; the second, the width of the arches. If the first molars lock normally, as you see in this picture, the mesio-buccal cusp of the upper will occlude in the buccal groove between the mesio- and disto-buccal cusps of the lower. And if the first molars are so locked in their eruption it will make *possible* the normal eruption of *all the teeth* both anterior and posterior to them, as has resulted and is here shown in this beautiful picture. But if the first molars lock mesially to normal or distally to normal in their eruption, it will *necessitate* the eruption into positions of malocclusion of all the remaining teeth both anterior and posterior to them, and according as these molars erupt and lock in mesial or distal relations, in one of the lateral halves of the arches, or both, will be determined certain classes of malocclusion which will be considered later.

Now, if the locking of these molars plays so important a part in the eruption and positions of the remaining teeth, can you not see how important it is that they be preserved and early attention given to their eruption and relations? Hence the time for beginning treatment of malocclusion is no longer mythical, but as fixed and well-defined as the first molars themselves.

It must be borne in mind, however, that even with the normal locking of the first molars and normal mesio-distal relations of the jaws and arches, the normal locking of all the other teeth is by no means assured, and malocclusion may involve any or all of the teeth anterior to them, but usually is chiefly confined to the narrowing of the arches in the region of the cuspids, with bunching of the incisors, similar to the case first illustrated, and, as we have said, by far the largest number of cases of malocclusion belong to this class, and it is to this great class we will first direct our attention.

Before leaving this picture let me try to impress you with the importance and wonderful relations of the occlusal planes,—how that we must gain their normal relations if we would hope to be successful in maintaining them in the positions in which we wish

them to remain after correction. And what a waste of time to consider one arch without the other, or to attempt to ignore the importance that each tooth bears to all other teeth in both arches. Or, in other words, this picture of normal occlusion and all that it means must actuate and direct all of our efforts from the beginning of treatment to the termination of retention.

Let me also try to impress you, before leaving this picture, that nature could never unaided have effected such perfect occlusion had there not been also normal lip pressure and normal respiration. So there are two forces acting upon the teeth, either one of which might disturb the balance of harmony in the development of the jaws and eruption of the teeth, and to work in ignorance of these forces and to direct our efforts to the symptoms only, manifested in so-called "crooked teeth," is a plan that intelligent dentists ought henceforth to abandon.

I shall not have time to consider in this lecture as fully and as thoroughly as I should like the relations that occlusion bears to the contour of the face. I hope to discuss this phase of the subject to-morrow at the meeting of the American Society of Orthodontists in Philadelphia, a full report of which will appear in the *Items of Interest*. Let me here say, however, that as we know that all of the teeth are essential to the best occlusion, equally as important is it to the most pleasing contour of the face.

The picture now upon the screen (Fig. 4) shows a face of most beautiful proportions. There can be no doubt that all of the teeth are present and in perfect occlusion. Such beautiful proportions could not exist with anything short of the full complement of teeth which were erupted and locked normally.

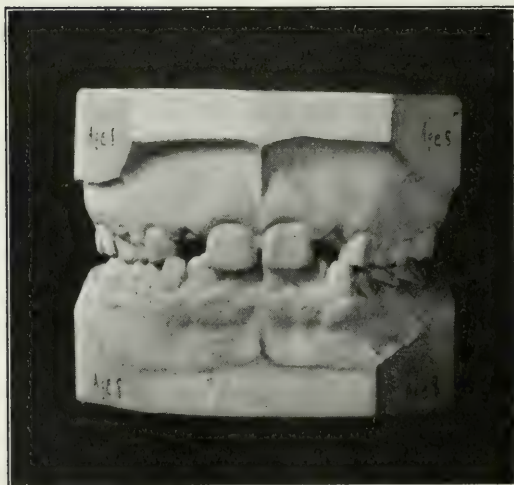
The next picture (Fig. 5) represents the case of a healthy child aged eight years. The first molars have locked normally. The permanent central and lateral incisors are erupting normally—plenty of room for all; but the next picture (Fig. 6) will show a far more common condition. Although the molars have locked normally, insuring the normal mesio-distal relations of the two arches, there is a lack of space for the eruption of the centrals and laterals. You will note that the lower incisors erupt first. The arch which they are forming is the mould over which the arch for the erupting upper teeth will be formed. Please bear this in mind: unless the lower incisors take their correct positions the upper ones cannot possibly take their correct positions. How important, then,

that the lower incisors be mechanically assisted, if necessary, to gain and maintain their correct positions.

FIG. 4.



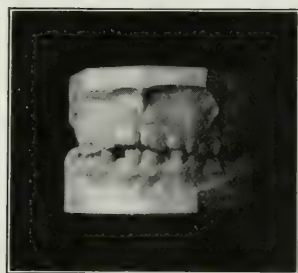
FIG. 5.



The first picture you saw upon the screen to-night had a beginning probably very nearly like the case here represented.

Fig. 7 represents a similar case in which I corrected the positions of the lower incisors early, establishing harmony in the rela-

FIG. 6.



tions of the two arches and thus removing all obstructions for the remaining teeth that were to erupt.

FIG. 7.

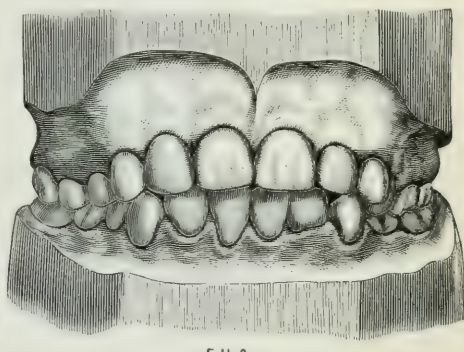
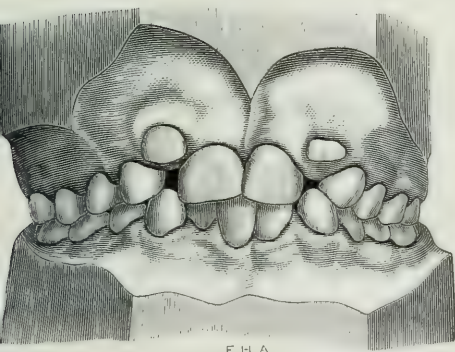
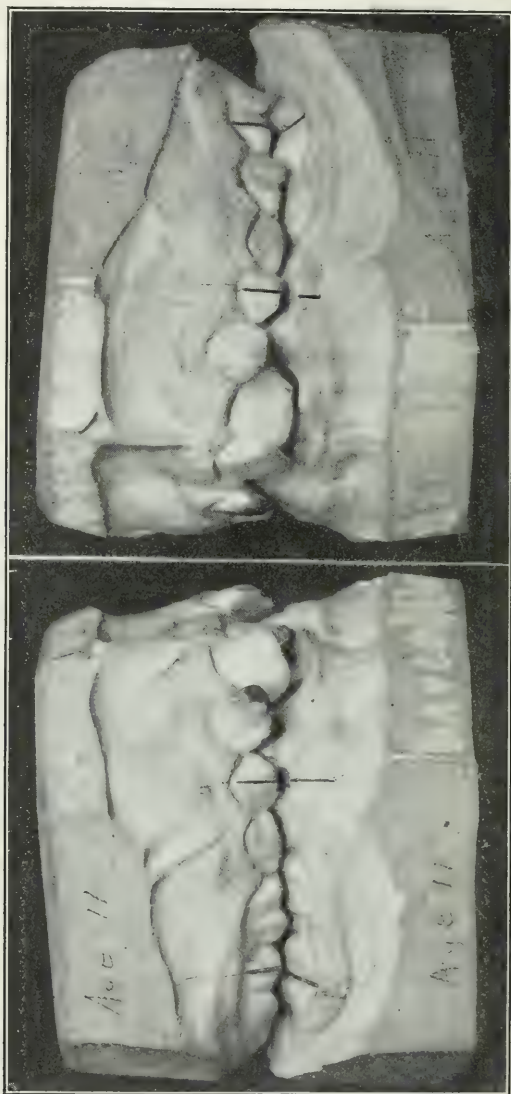


Fig. 8 represents another case in which the eruption of the incisors had been allowed to progress still farther. The lower incisors are greatly bunched, one of them being deflected entirely lingual to the normal line of occlusion, as you will see in the next picture (Fig. 9).

There could be no better illustration of how the upper teeth are forced by reason of lip pressure into abnormal positions in being moulded over the abnormally small arc of the lower. All of this is simply the result of mechanics,—a slight deflection at first from the normal position, which made possible and easy the continuation

of this deflection of the erupting teeth from their natural positions. Had the lower incisors been early corrected, the results here

FIG. 8.



shown could not have taken place, and yet it is common to have such a condition explained by the very wiseacres as being the result

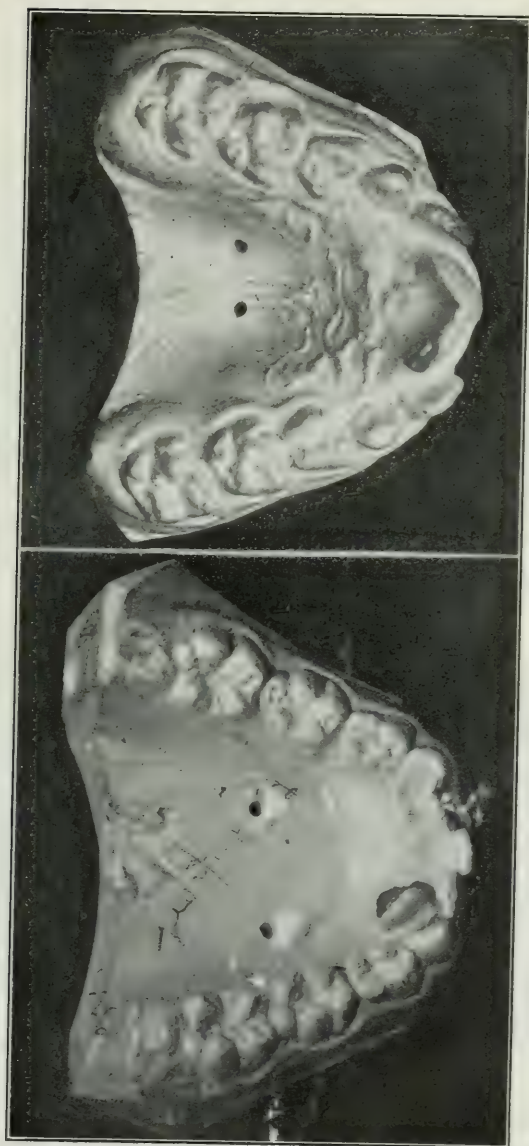


FIG. 9.

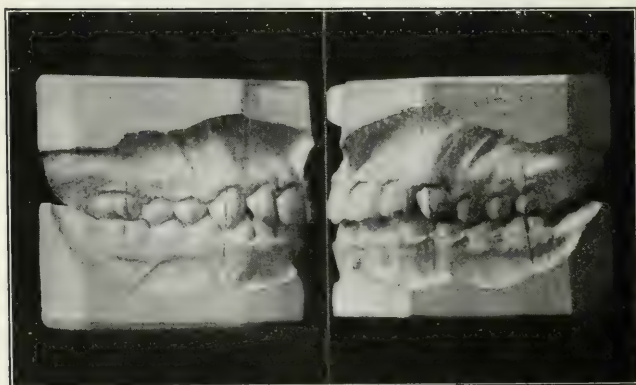
of heredity, the child inheriting the large teeth of one parent and the small jaws of the other. It is time that such nonsense passed out of the minds of intelligent dentists. Nature does not make such mistakes in so important a matter as the dental apparatus.

FIG. 10.



It is time also for intelligent dentists to know that extraction in this case, and in all such cases, to gain room for the crowded teeth is an evidence of ignorance and is as pernicious as it is unneces-

FIG. 11.



sary. There is an abundance of room for the teeth in these arches, as in all cases of this kind, as is well shown in the next picture (Fig. 10), where all the teeth have been moved into the line of occlusion, and when the two models are placed together, as shown in Fig. 11, you will see that there is harmony in the sizes of the

arches and in the occlusal planes, each one giving support to all the others. These occlusal planes will come more and more into

FIG. 12.



harmony as the teeth settle into their places, and I want to show you that the lips have not been crowded out to the size of a Hottentot's, either, but only to the extent that nature intended they should be to give the best and most pleasing contour to the face, as you will see by the next picture (Fig 12), and I would ask you if this boy looks like a degenerate.

Let us take another case, Fig. 13, the same in principle as all those we have seen, only it has been neglected a little longer and malocclusion has developed a little farther. We know that it belongs to the same great class of cases, for we see that the molars are normally locked, and we know the mesio-distal relations of the arches must be normal, the same as all those cases we have thus far considered. Had this boy received treatment early in the eruption of his incisors, this pronounced deformity might easily have been prevented, but his parents were repeatedly told by dentists that he was too young; that he should wait until all his teeth were in place before having anything done, and that probably nature would correct their positions. You see the result. Other dentists wanted

to extract, and that is just what I would have thought necessary a few years ago, but now I know it would have been a most inexcusable blunder, and I see or know of many such blunders being daily performed. What is clearly indicated is to correct the occlu-

FIG. 13.



sion—to place each occlusal plane in its harmonious relations with its opposing occlusal planes, just as nature intended it to be.

The next picture (Fig. 14) shows where this has been accomplished, and you see there is an abundance of room in the alveolus for all of the teeth. Of course, this was not true immediately after the movement of the crowns of the teeth into their correct positions, for the alveolus had been arrested in its development. It had only been developed, as it must always be, in accordance with the positions in which the teeth arranged themselves, and as soon as they were placed in their correct positions nature was stimulated to complete the development of the alveolus, and you will note how pronounced this was in the two years that intervened between the time in which they were moved into their correct positions and the time when this model was made.

Let us examine another case, Fig. 15, belonging to this same

FIG. 14.

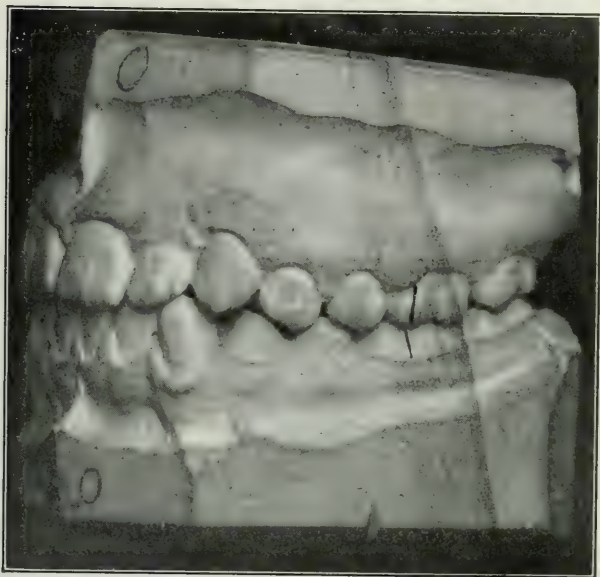
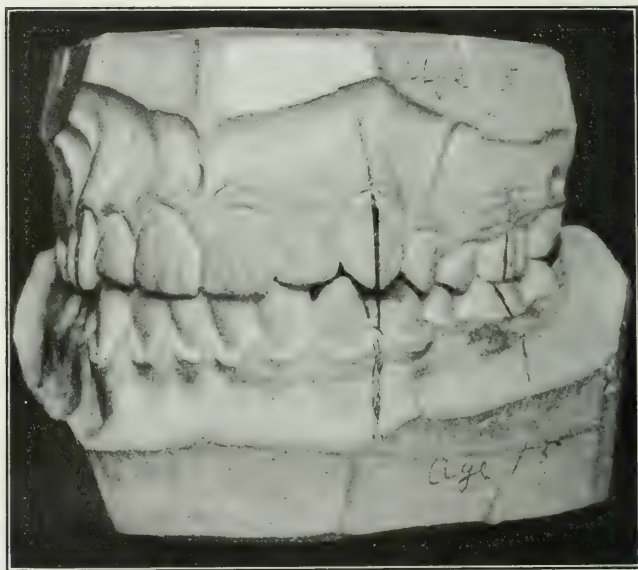


FIG. 15.



great class, where malocclusion has been permitted to progress unchecked still farther. Surely here, you will say, the jaws are too small for the teeth, and extraction must be resorted to. But it was only necessary to enlarge each dental arch sufficiently to move the crown of each tooth into its correct position in the line of occlusion and retain it there until nature could complete the development of the alveolus, as shown in the next picture (Fig. 16). There

FIG. 16.



was then harmony in the sizes of the arches and each gave support to the other through the correct relations of the occlusal planes, and the excellent results in the facial lines are shown by the next picture (Fig. 17).

The discovery of the fact that nature will build in a sufficient amount of alveolar tissue to meet the requirements of the teeth in their new positions, and restore the lack of contour to the face, is of inestimable value to the science of orthodontia, yet this fact would never have been known without accurately made models from plaster impressions, from which we can easily determine the extent of the growth of bone; and I wish to here make protest against the slovenly, inaccurate, unscientific models that are usually shown

as evidence in such cases. You know that it is impossible for any one to take an accurate impression of the teeth and alveolus with any of the wax or plastic materials, and models made from such impressions ought no longer to be accepted as evidence, for at best

FIG. 17.



they serve only as a base of conjecture. Models should be made with the same degree of skill that would be exercised in making the finest fillings, bridges, or dentures. When placed in articulation we should be able to examine them from every point, that we may study carefully the relation of each occlusal plane, the position and direction of each root, as shown by the next picture (Fig. 18). Such models are of lasting scientific value, and a collection of them forms the most valuable library of orthodontic literature.

I should like to show you many more models belonging to this

FIG. 18.



great class, and the accurate measurements from which have been determined how much the very apices of the roots have been shifted by

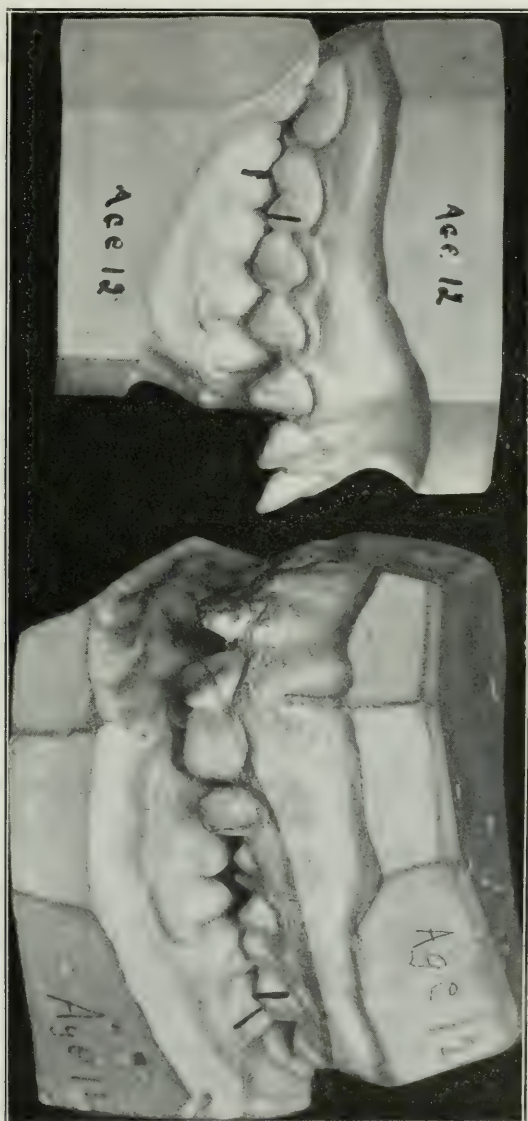


FIG. 19.

nature as a result of establishing normal occlusion of their crowns by means of the regulating appliances, but I must hasten to another

great class, well defined and unmistakable if you have but learned to diagnose it properly, beginning the diagnosis with the first molars instead of looking at the incisors alone, for I must repeat that in this class the positions of the incisors are but the symptoms, the relations of the molars the cause (not the primary cause).

The two models now shown upon the screen (Fig. 19) illustrate well the main principles of all cases you will ever find that belong to this great class, which I have named Class II. They represent the two divisions of this class. They are alike in the main, for the lower first molars in both cases erupted and locked in distal occlusion on both sides,—that is, one cusp distal to normal,—which necessitated all of the teeth anterior and posterior erupting and locking in distal or abnormal relations. The remarkable difference which the incisors in the two divisions present is due to the difference in the lip functions. The case in which the incisors protrude results from the lack of lip function, the patient being a mouth-breather and the upper lip being elevated and exercising little or no pressure on the labial surfaces of the incisors, allowing them to move outward. This outward movement has been intensified by the lower lip being constantly forced behind them in the effort to close the mouth. In the other model, the bunched and flattened positions of the incisors are due to the influence which the lip has exerted upon them, for such patients are normal breathers, keep the mouth closed the requisite amount of time, and the normal, well-developed lip exercises a strong pressure upon them, thus bunching them as they are forced back to meet the lower incisors.

The two pictures now upon the screen (Fig. 20) show the remarkable contrast in the faces of the patients whose malocclusion was represented by the models you have just seen, and you will please note how different the development of the nose and lip of the normal breather is from that of the buccal or mouth-breather, and also how the facial lines of both are thrown out of balance by the recession of the mandible, due to the teeth being in distal occlusion. Had the first molars been watched during their eruption and locking, and forced by proper mechanical means to assume normal relations, and there retained with suitable devices, a very different result from that which you see here must have followed, especially if the throat and nose of the buccal breather had also been looked after and successfully treated.

In the treatment of these cases I believe I can again prove to

you that my theory is correct, that extraction is wrong, that the full complement of teeth is necessary to the best results, and that each tooth shall be made to assume its correct relation with its fellows. In other words, if the molars and premolars of the upper

FIG. 20.



dental arch be moved distally one-half the width of a cusp of a molar or premolar, and the molars and premolars of the lower arch be tipped forward in their alveoli to the same extent, or one-half the width of a cusp of a molar or premolar, there will then be normal mesio-distal relations of these teeth, and if the arches in the region of the incisors be put in true at the same time, there will be harmony in their relations and the best effect will have been produced upon the facial lines. In other words, we will have established normal occlusion with *all* its possible benefits.

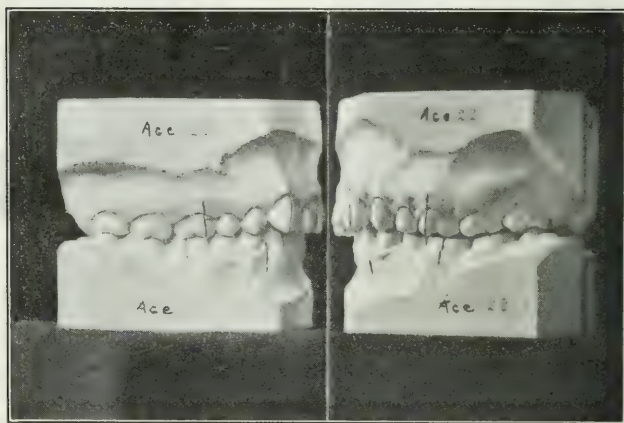
This plan of treatment I have been practising now but three years, and so pleased am I with it in the large number of cases that I have so treated that I no longer practise or believe in the plans that I formerly advocated, or that of gaining harmony in the sizes of the arches by the sacrifice of the two first premolars in the upper arch and retracting the cuspids and incisors to close the spaces, or by the plan known as "jumping the bite," first advocated by my friend, Dr. Kingsley, consisting of first placing the teeth of each arch in correct alignment and then compelling closure of the mandible forward the width of one premolar tooth on each side, so that all of the teeth were in normal occlusion. That both of these plans may and have been more or less successfully followed there can be no doubt, but I believe them to be far more tedious, more

difficult of accomplishment, and more uncertain as to satisfactory results than the plan I now follow.

I regret that I have not time to show you a large number of cases belonging to the two divisions of this great class, embracing a wide range as to age and stages of development, but must content myself with only a few cases typical of each.

The next picture (Fig. 21) will show you the models of a very well defined case belonging to the second division of this class. The

FIG. 21.



patient was a young man twenty-two years old, of massive frame, large jaws, and large teeth firmly set in their alveoli. He was a normal breather. As you will observe, there was complete distal occlusion of the teeth in both lateral halves of the arches, with bunched and retruding upper incisors and a very weak expression in the lower part of the face, due to this condition.

Now, as to treatment. The upper molars and premolars were moved distally and the lowers mesially until they were in normal occlusion, as shown in the next picture (Fig. 22). You will see that each occlusal plane is in normal relation with its opposing occlusal plane, thus locking and assisting in its retention, and I assure you that the facial lines were as greatly improved as was the occlusion.

And how was this accomplished? you will naturally ask, for you must justly reason that to move all of the teeth in both arches, as has been done, certainly would require a considerable degree of force, and that it should be directed in the right direction.

So far I have said nothing about regulating appliances, for I have wished to impress you with principles more important. I believe regulating appliances have heretofore been made far too prominent in such discussions—have been put far in advance of a comprehension of the principles which should go first and actuate their intelligent construction and operation. They have been exploited until their name is legion. They represent about all that there is in mechanics. They may justly be said to typify ingenuity.

FIG. 22.



as well as complexity, crudity, and absurdity. Had their designers and makers understood the importance of occlusion I believe there never would have been the hundredth part of the number that now burdens our literature to confuse the student and torture humanity.

I formerly advocated a few combinations of appliances which I have now largely abandoned. I believed the headgear and chin retractor were valuable. The latter is now entirely obsolete in my practice and the former but rarely used, and the same might be said of the traction screw and rotating levers. The jack-screw has been and doubtless will long continue to be the one form of regulating appliance most used by dentists, for it seems almost impossible to get dentists to study occlusion, its bearing upon and importance to orthodontia, but they can and do reason only from the basis of the mere symptoms, or "crooked teeth," as they call them, and they naturally reason that a jack-screw placed against a tooth that seems to be "straight" and made to operate at its other end against one that is "crooked," to push it into a better position, is the one thing

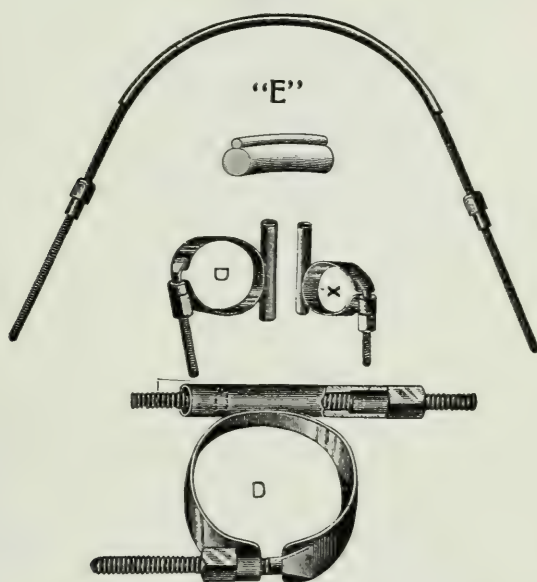
needful, but I believe the jack-screw to be one of the poorest of regulating appliances, and I say this notwithstanding that I am the inventor of what I believe to be the most simple and efficient one yet brought out, and one that has more base imitations than any other of my inventions. But I now think the principle is wrong with the jack-screw, as it is with all those forms of appliances that are made to act locally, so to speak, or upon only the teeth that seem "crooked," instead of one that shall be operative from the basis of occlusion, having the control of one or of all of the teeth of not only one but of both arches, if need be. I cannot bring out the point too forcibly that it should be our mission to improve the dental apparatus as a whole through occlusion, for in this way only can our efforts be fruitful of the best results in not only bettering the principal function of the teeth,—mastication,—but their appearance, as well as giving greater freedom to the movements of the tongue, and also making possible the modification of the vault of the arch towards the more normal growth and development of the nasal tract, and last, but of great importance, a better contour of the face with more pleasing lines of facial expression.

I am now accomplishing fully ninety-eight per cent. of the tooth movements in my practice with but a single appliance, and performing them far easier and more quickly than I ever did with all the various combinations I have ever advocated in the past, which at most were very few, for it has ever been my aim to simplify both the diagnosis and treatment of cases in my practice, and all of the cases you will see on this screen to-night have been treated with but one appliance,—namely, the expansion arch,—and although I believe that I have added some valuable improvements to it, yet it was known and used before this republic was. It was first used by that greatest of the early dentists, the Frenchman Fauchard.

The next picture (Fig. 23) shows it as I now use it. In temper it contains much spring, sufficient to speedily widen the dental arch, if need be, and having self-locking nuts to properly adjust it to the demands of expansion. It is round instead of being half-round or flat, as used by the older writers, which better prevents the accumulation of food, as well as making it more compact and less conspicuous. My latest improvement to it is a delicate rib on the periphery of the unthreaded portion. This is to be notched at desired points to prevent the slipping of wire ligatures, this form of ligature being not only a very valuable addition to orthodontia, but

making this wonderful appliance vastly more efficient. I have called it wonderful, and truly it is, and he who intelligently experiments with it will grow daily more and more impressed with its great possibilities in correcting malocclusion. In my opinion there

FIG. 23.



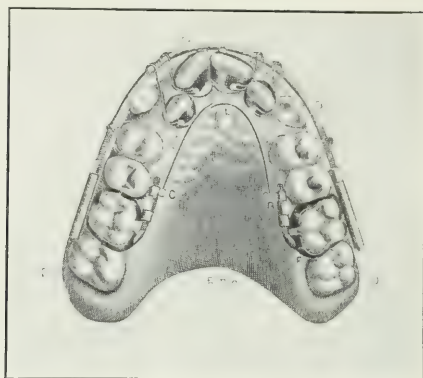
is no tooth movement, be it simple or complicated, that cannot be performed more quickly and easily with this than with any other device, and I have arrived at this conclusion not hastily, but gradually, and one by one have abandoned nearly all of the other once favored appliances.

With it we not only have complete control of the direction of the teeth we wish to move, but all others that we wish to prevent moving or to enlist as anchorage either in the form of simple, stationary, or reciprocal anchorage, etc., and you all know how important a part anchorage plays in tooth movement.

Let us study for a moment the use of the arch in a severe test in complicated tooth movements where all of the teeth are to be moved, as shown in the next picture (Fig. 24), for the dental arch must be widened, the laterals and centrals moved forward and rotated. All was accomplished at the same time. You will please

leave out of consideration the reinforcement spring shown in the vault of the arch, for this is only an auxiliary and may or may not

FIG. 24.

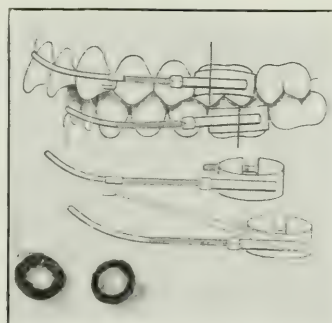


be used, but is only rarely necessary, and you will see what perfect control is gained over each tooth, and how the force from the tightening of the unflinching ligatures, from the spring of the arch, and from the nuts in front of the tubes on the anchor teeth is distributed and reciprocated. I wish we might spend much more time on this picture, but I have carefully described it in other writings,¹ and must hasten to other pictures, only stopping here to say that in all cases belonging to the first class, if we have used this appliance intelligently and have adjusted each tooth in each arch, the arches and the occlusal planes will then be in harmony, and if the teeth are in distal occlusion, as in the case considered but a few moments ago, the lower teeth may be easily shifted mesially and the upper teeth distally into harmony of occlusion, it only being necessary to use two of the expansion arches, and reciprocating the force from one to the other, as shown in the next picture (Fig. 25), the force being derived from one or more delicate rubber ligatures made to engage the distal ends of the tubes of the bands on the anchor teeth of the lower arch, and sheath-hooks which have been attached at desired points to the upper expansion arch. By studying this picture carefully you will see that force is exerted in the exact direc-

¹Treatment of Malocclusion of the Teeth and Fractures of the Maxillæ, sixth edition.

tion it is needed, and at the same time most inconspicuously and with very little inconvenience to the patient.

FIG. 25.



When you consider what a large percentage of cases there are belonging to this class and how easily and successfully they may be treated by this method, you must be impressed with the fact that a most valuable step forward has been gained in the science of orthodontia. Now, I know that when anything new and valuable is brought out in dentistry there is usually that familiar type of individual who will rise up and say, "Why, I have been using that for twenty-five years," but to my mind this savors of "degeneracy." The fact is, to the best of my knowledge and belief we are indebted to Dr. H. A. Baker,¹ of Boston, for this idea, he having used it in the retraction of the protruding incisors of his son a number of years ago, and it was from him I received the idea. I have hence called it the "Baker anchorage," and it has almost revolutionized my daily practice. In its use, however, I would add this important improvement,—that the force be directed upon the molars first, instead of on the incisors, their positions being, as I believe, merely the result of the malpositions of the molars, and we should unravel the complexities of these cases by beginning right, that is, with the molars, following with the premolars, and lastly adjusting the incisors. And using it as here shown, the

¹ Since giving the above address I have learned that Dr. Calvin S. Case, of Chicago, also employed this form of anchorage, probably at about the same time as Dr. Baker. It is reported in the Transactions of the Columbian Dental Congress.

force is directly received upon the first molars, pushing the uppers distally and pulling the lowers mesially. Of course, all the lower teeth, as here shown, will be carried forward, and all the force required in their movement will be pitted against the upper first molars. As these move distally (the nuts being occasionally tightened), more or less space will be noted between them and the second premolars, and after the molars have been carried well back into correct positions the anchor bands should be removed and similar, smaller bands (X bands) placed upon the second premolars and the expansion arch again applied. Wire ligatures are also made to engage both first and second premolars on each side, and force from the rubber ligatures again exerted. After the premolars are well back into position the nuts in front of the tubes on the anchor teeth are loosened, or removed entirely, allowing the force of the rubber ligatures to be received upon the incisors through the centre of the arch. In this way the incisors, if they be prominent, are soon retracted.

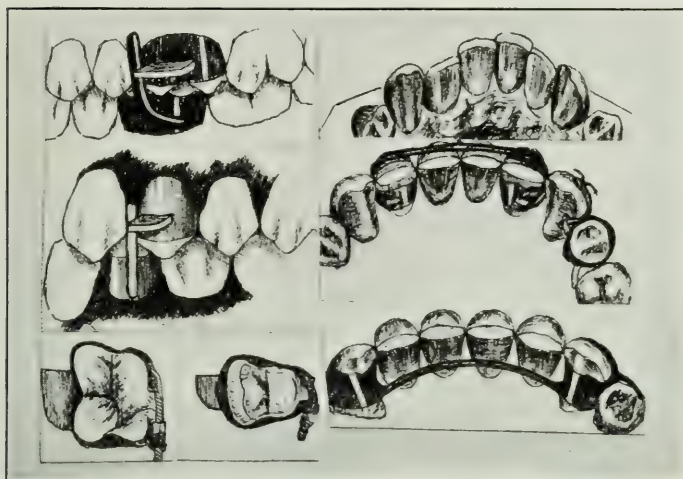
It is needless to say that care, judgment, and skill are necessary to successfully—and, I may add, almost painlessly—operate this device, and the progress made in these cases should be easy, speedy, and continuous, but with the careless and unskilful much trouble and annoyance is but natural.

Of course, it is of the utmost importance that the teeth shall be mechanically retained in their new positions. The real retaining devices are the inclined occlusal planes, but these must be assisted for a time by a mechanical device, or of course the teeth that have been moved will speedily revert to their original positions, and the next picture (Fig. 26) will show you a simple device for holding the teeth that have been moved mesially in the lower arch and those that have been moved distally in the upper arch in normal relations. I have been using this with much success for a long time. At first I used a spur cemented into a tooth,¹ but later attached the spurs to accurately fitted clamp-bands, the spur being made to close in front of a metal plane attached to a band upon an opposing tooth, as you now see them. They may be used either upon molars or premolars. The bands must be accurately fitted and carefully cemented, and the plane and spur correctly placed. If this

¹ Regulation of Teeth and Treatment of Fractures of the Maxillæ, fourth edition.

be properly done they will last as long as desired. I have had them remain in position two years without loosening, but unless they

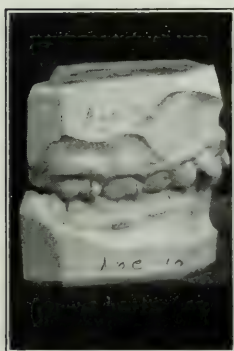
FIG. 26.



are properly adjusted they will give trouble, the one usually giving way being the spurred band.

FIG. 28.

FIG. 27.



One word of caution, for this picture is misleading. It represents the spur of considerable length. It should be short, only sufficient in length to pass beyond the end of the metal plane when

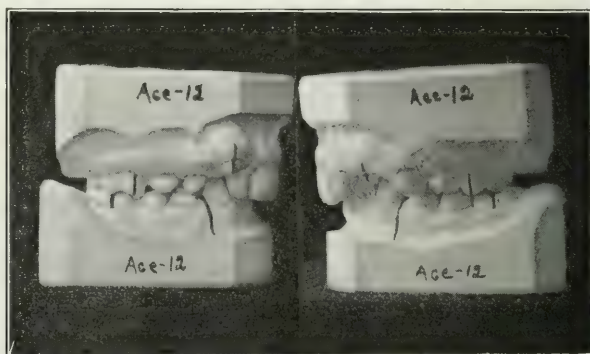
the mouth is closed. The edges of the bands should also be close to the occlusal margins of the teeth, and the plane of metal close to this edge of the band. This is important, for it makes possible a very short spur, and consequently far less strain upon the band than when a long lever-like spur is used.

The other devices shown in the cut are for the retention of incisors and cuspids, and are so well known that I will not take up your time here with an explanation of them.

The next picture (Fig. 27) will show another case belonging to the same class we were last discussing, only this patient is much younger, and you can easily imagine how much more quickly and easily the teeth were adjusted to the positions shown in the study model, Fig. 28. The retaining device, as just described, is also shown here.

Fig. 29 shows a most pronounced case of this type, and you will note how greatly the bite is shortened in connection with the

FIG. 29.



bilateral distal occlusion. How unfortunate it is that the adjustment of the first molars could not have been accomplished early, to prevent this condition. No wonder the face both in front and in the profile, shown in Fig. 30, shows such a shortening and inharmony of contour, nor that it is so vastly improved after treatment, as shown in Fig. 31. The occlusion after treatment is shown in the study model, Fig. 32. I ask you what would have been the effect on the facial lines if extraction had been resorted to in this case?

Cases belonging to the subdivision of this division of this class are of course numerous. Fig. 33 shows one that is typical, or uni-

FIG. 30.



FIG. 31.



FIG. 32.

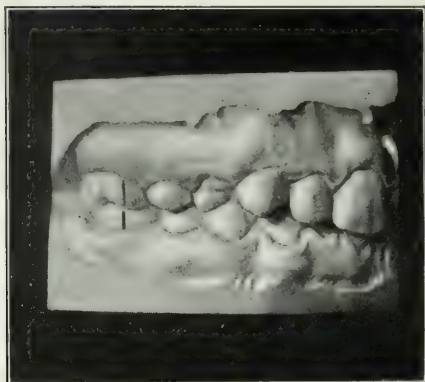


FIG. 33.

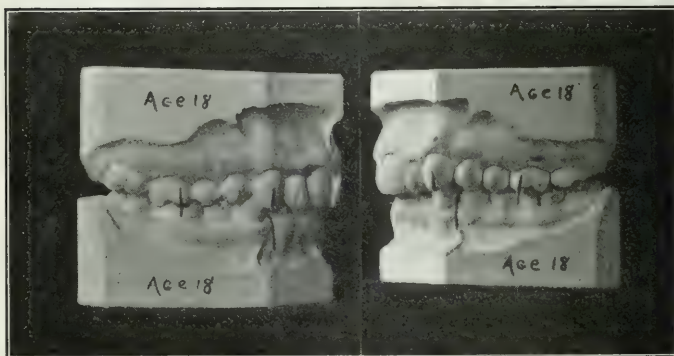
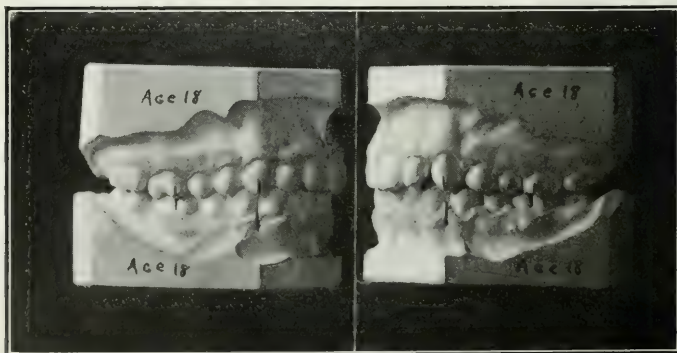


FIG. 34.



laterally distal, and Fig. 34 represents the case after the shifting distally of the left molars, premolars, and cuspid of the upper arch, as well as the correction of the positions of the incisors, and the shifting mesially of the left molars, premolars, and cuspid of the lower arch was accomplished. You will notice how the length of overbite of the incisors has also been improved, as it must be in all such cases if this plan of treatment be followed.

The next picture (Fig. 35) shows a most pronounced case belonging to the first division of this class, or the buccal-breathing and protruding-incisor type, and notwithstanding that there is such great prominence of the incisors, yet the molars and premolars occupy the same positions as in all this great class, so there would be no more excuse for extracting two premolars from the upper arch in this case than there would be in the ordinary case of far less protrusion.

The next picture (Fig. 36) shows a study model of the occlusal surfaces of the upper teeth, and you will see by the spaces posterior to the cuspids how much the molars and premolars have been carried distally, and the next study model, Fig. 37, shows the corrected occlusion, although the teeth with their retainers have not yet settled into position sufficiently for the making of final, perfect models of the case.

I could show you a large number more, but they would all resemble this so closely in form and in detail of treatment that it would be but mere repetition. I will only add that in all these cases where I have sacrificed premolars I believe I have blundered, but this was before we had the Baker anchorage. Now there seems to be no longer excuse for such extraction.

Fig. 38 illustrates a case typifying a subdivision of Division 2, Class II., or unilateral distal occlusion. These subdivisions are perhaps more numerous than the parent type, and their treatment in so far as the malocclusion exists is identical with that described for cases bilaterally distal, the Baker anchorage being used only on the maloccluded side.

Fig. 39 represents the case after having been so treated and harmony of the occlusal planes established.

There is not time this evening to fully consider cases belonging to the third great class of malocclusion. I will show but one,—that of a comparatively young person,—in Fig. 40.

I believe that if we begin treatment early, retain all of the

FIG. 35.



FIG. 36.

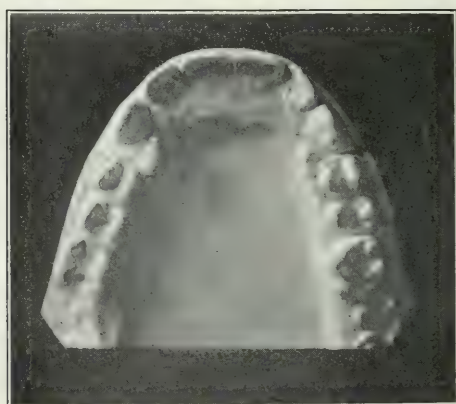


FIG. 37.

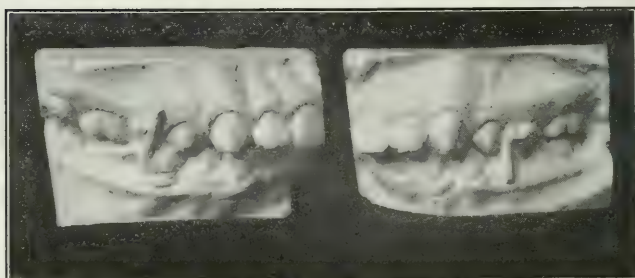


FIG. 38.

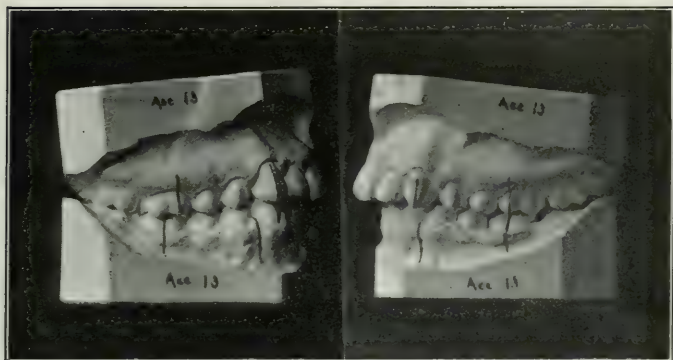


FIG. 39.

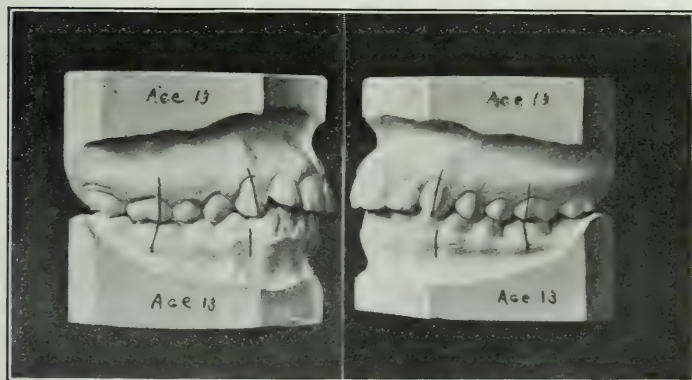
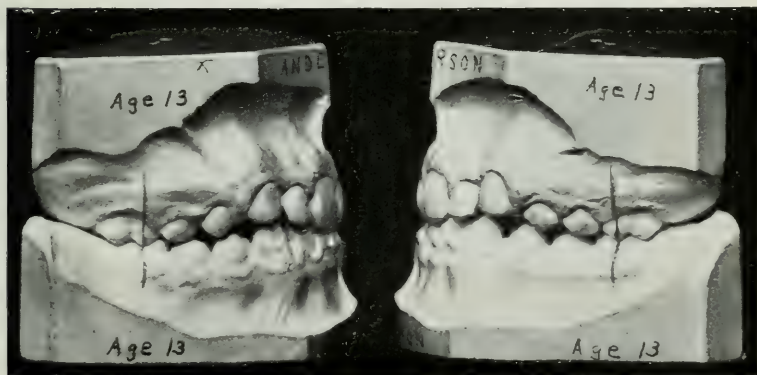


FIG. 40.



teeth, shift the first molars into normal occlusion and lock them there, we will have accomplished the best results possible. Fig. 41

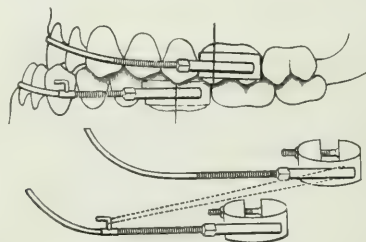
FIG. 41.



shows this case only three weeks after treatment was commenced. I assure you that the rapidity with which the teeth moved in this case was as great a surprise to me as to the patient. The teeth were retained for about six months, when they had settled into very ideal relations.

The plan of treatment was the same as that described for cases belonging to Class II., only, of course, the direction of force was reversed, as shown in Fig. 42.

FIG. 42.



Cases belonging to the subdivision of this class are so rare it is not necessary here to discuss them.

So far I have tried to impress you with the importance of normal occlusion and of maintaining the full complement of teeth in

the consideration and treatment of cases of malocclusion, but I feel that I would not be true to my trust in the science I am trying to

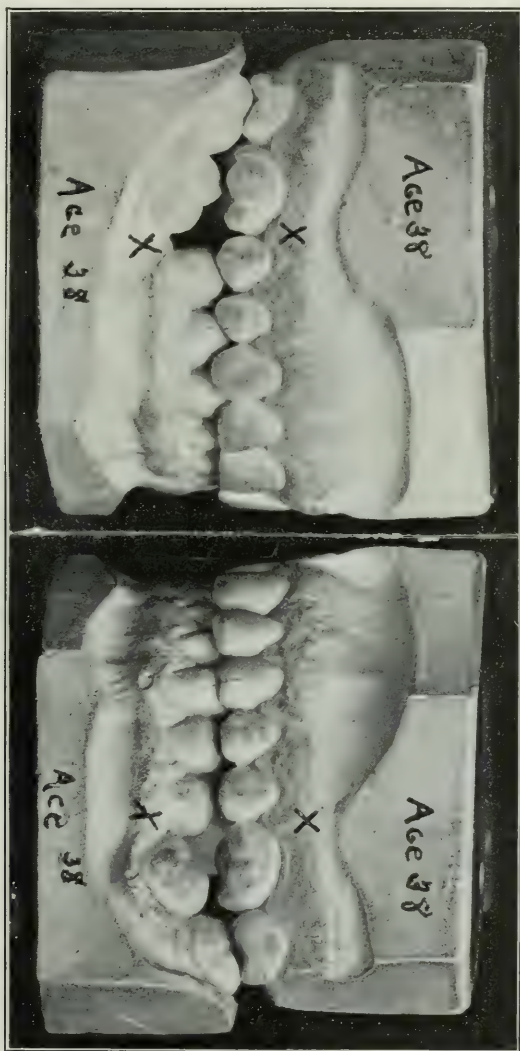


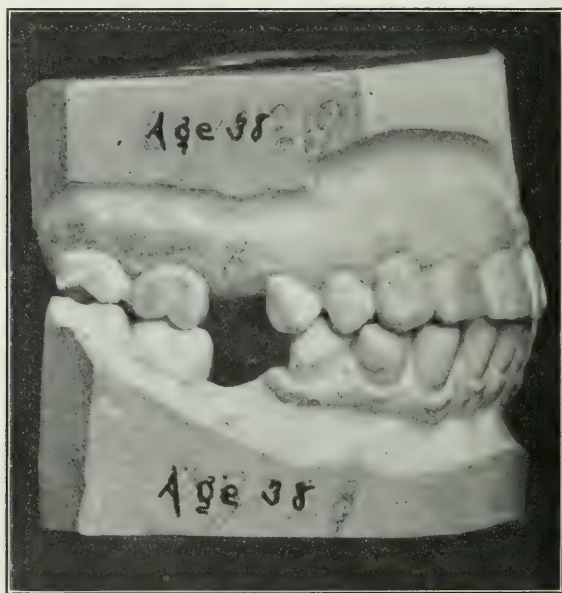
FIG. 43.

uphold if I closed without showing you at least a glimpse of the baneful effects of mutilation by extraction.

Fig. 43 shows the effects of sacrificing all four first molars at

the age of nine years for the purpose of preventing malocclusion, and you see how successful the effort was. Not only have the teeth that remained been rendered almost useless for mastication, but in recent years there has been chronic pericementitis, due to the pressure of the malocclusion on the molars in their tipped and abnormal positions. The facial lines were also greatly marred by the arrest in the development of the alveolus, for without the wedging influence of those most important teeth, the first molars, the teeth anterior could not be pushed forward by the development and eruption of the second and third molars to properly contour the face.

FIG. 44.



And this condition is not peculiar to this case, but is the result in all cases where the first molars have been sacrificed. I have carefully examined many hundreds of such cases where one or more of the first molars has been sacrificed, and I have yet to see a single instance where it was not followed by malocclusion similar to this.

Gold-capping of the leaning molars was resorted to in this case to improve the occlusion—only to aggravate the condition, for the gold crowns only made a longer leverage for the occlusion to act upon in tipping the teeth.

There seemed to me but one rational plan of treatment,—namely, to gain the space lost by the molars and then have them replaced by artificial substitutes. Fig. 44 shows all the teeth anterior to the space to have been carried forward and those posterior to have been tipped backward to approximately their correct positions, and the case ready for the bridge- or plate-maker.

A point of much interest in connection with this case is that, although the patient was thirty-eight years old, the teeth moved as rapidly and as easily as they ordinarily do in patients eighteen years of age.

FIG. 45.



I believe that if there were more skilful orthodontists to whom patients might be referred previous to having bridges inserted in their mouths, far better results would often follow the bridging process. The placing of bridges upon leaning piers seems to be as unmechanical as it is unnecessary, and the dentist who will invent a practical bridge for the restoration of lost first molars shall be called blessed, and there is a great future before him.

Fig. 45 shows the face before treatment, and you will note how

greatly it is lacking in proper contour in the region of the mouth, and how greatly it has been improved in Fig. 46, which shows it at the completion of treatment.

FIG. 46.



I wish that I might have time to show you at least fifty slides bearing upon mutilation of the dental apparatus by extraction, but as it is late I will let this remarkable case, which, as I have said, is typical in its results, suffice.

In conclusion, let me say I have touched but a few of what seem to me the important places in orthodontia. Each class, division, and subdivision is ample for a full evening's discussion, but if I have awakened a higher appreciation of occlusion and convinced you that the first molar tooth is not only first in importance but first to correct if in malposition, I will have accomplished much, but no less than if you have been brought to realize that the hasty, ruthless sacrifice of teeth for the correction or prevention of malocclusion is as barbarous and unscientific as it is disastrous in its results. If I have done this I shall always feel that my mission to this society has been an enjoyable and fruitful one.

SANITALOGY: A DISCUSSION OF THE HEALTH PRINCIPLE.¹

BY D. R. STUBBLEFIELD, M.D., D.D.S., NASHVILLE, TENN.

THE world is not so large but what the feet of the traveller have trodden its farthest bounds. If one reason has failed to induce the investigation of any part of the globe, another has arisen to supply the demand. He is a rare traveller, then, who can bring back a story of new regions explored, new paths walked in, new scenes beheld. Of late years it has grown somewhat similar in the world of science. So much has been rendered commonplace by familiarity that even marvels would scarcely be deemed worthy of head-lines in the evening papers. It is small wonder we have doubted what would entertain you on this occasion.

While anxiously meditating, many of the trite old subjects that have done duty from the days of the fathers presented themselves. That long line of service-worn cripples did not look like a review of veterans, broken by the scars of honorable strife, and therefore entitled to sympathetic consideration, but seemed rather like an army of impudent beggars who showed that each one thought that he was entitled to "all that was coming." Just like beggars, the rebuff of one did not affect the confident air of the next, for each one had to have his own dose of direct dismissal before the preposterous idea of his rejection could gain lodgement in his cranium. For hours this was kept up. We were not willing to attempt to rehabilitate such scarecrows as most of them were, and we wearily turned the glass of our hope out into the seeming void of the unknown. Like another Barnard, we glued our eyes to the reflector and would not budge, held there by the belief that another "fifth satellite of Jupiter" was there if we could only pierce the tremulous depths of ether beyond. Failing in this, as a last resort we came home and began to take stock of all those fugitive ideas and half-formed convictions that had accumulated within us as the years had passed.

At last we found a trail of an idea, but could not find a tree to run it up. Think of that, an idea and no word to express it!

¹ Read before the Massachusetts Dental Society, Boston, June 3 and 4, 1903.

We were therefore compelled to coin a word, which, strictly interpreted, is open to the same objection as the synonyms in not exactly expressing our meaning; still, as it has no recognition by any one for anything else, it ought to be permitted to us herein. Our friend Dr. Boardman made the reassuring comment on it that we would keep everybody "guessing" with such a title. Nevertheless, when we are through we venture the prediction that none will be in doubt as to our word or meaning.

When we confess that the subject of this paper is an unusual though not unique union of two languages, a word from two very obvious roots, we are sure it will take the wind out of the sails of your criticism. As we have interpreted sanitology it is not sanitation, nor exactly hygiene, although suggesting both from an etymological stand-point. For the purpose of this discussion, whether it is exactly true or not, we are going to limit sanitation to those offices done by the State or city to improve environment and overcome those material menaces to public health which naturally and rapidly accumulate. This we shall call State medicine, comprising all efforts to remove or render innocuous the myriad forms of by-products, excretory in their nature, which result from great aggregations of human beings. It embraces all those acts that are done on the outside of us, around us, which the State or municipality not only may, but must, do as a matter of self-preservation. Very properly in this realm we place sewerage, street-keeping, garbage removal and disposal, drainage, general ventilation and disinfection, food examination, and so forth. We repeat that we are very well aware that all of this general health-precaution cannot be legitimately thus classified, but we make bold to do so for our purpose on this occasion.

Again, whether it is exactly true or not, we are going to confine hygiene, or hygeology, to all those intelligent services which the physician renders to his patient. He takes it for granted that his patient has received the benefits of all that sanitation can do, and in addition prescribes certain regimen or measures to further protect him from disease. This comes, you will please observe, closer to the individual, follows him into his home, in fact, and may be the just personal parallel to those measures included in State medicine, which we have applied to the community at large. It is a fact that at several points the two merge and we find that the State or city health officer joins the family physician in iso-

lating contagious cases and complying with certain demands of a more general nature and extent. The family physician concentrates his powers on the individual and, forsaking all others for the time being, devotes himself to the needs of that one. He treats this organism in like manner that the ideal sanitary officer is expected to treat and guard the city or State at large. The sanitary officer uses quarantine, the cart, the hose, and, if deemed necessary, the removal or even destruction of an offending centre of disease; the hygienic officer uses the bath, the purge, the thousand and one combinations and concoctions upon which science or tradition, or both, depend, and if all these fail he sends his patient to Europe to rid himself of further embarrassment.

It will be noted that all these measures and endeavors proceed from the outside and go to the centre. The organism is the object aimed at by them. There is an honest intention that amply justifies all that is done, doubtless, but we desire to emphasize the fact that the co-operation of the individual is taken for granted or accepted as incidental and not always, if ever, recognized. *A power working from within outward* is the key, the motif, the declared entity of our subject and this discussion. It might be termed vitality, nature, or the "*vis medicatrix naturæ*," but we shall call it the health principle. It might be suggested that the study of biology would cover the subject, but that investigation of the cell, with all its processes, changes, and phenomena, is still outside the intention of this discussion. The cell is admitted into this discussion as the priordial organism in which the necessity for outside assistance and care is measured in parallel by that which is called for by the whole organism. It is a form of living structure that differs in degree but not in kind. It may be affected by the outside measures before cited, and it is, though infinitesimal, the theatre of action of that principle above denominated the health principle, as much so as if it were greatly enlarged. We do not mean to speak here of material structure as such, but only as the vehicle, organ, or home of this health principle within us. What shall be said regarding this pervading principle is presented as merely suggestive rather than any attempt at final conclusion or scientific contribution. Reflections upon the subject have for a long time entertained us, and of late years have greatly modified the views taken of many of the so-called dogmas which still dominate the world in every department of medicine and surgery.

That there is such a principle or power within all living organisms cannot be doubted. There is a tendency in all organic life, whether animal or vegetable, to defend itself and repair itself, to get well from any lesion or interference with its normal state and maintain that condition. It is the sheet-anchor of the confidence, conscious or unconscious, of every practitioner of the healing art, whether he treats a man or a monkey or a molecule of protoplasm. Like many other natural beneficences, however, it has been taken for granted and little valued, yet its indefinite suspension or loss would mean the rapid cessation of all organic life. Much has been done to protect the citizen from the evil effects of all causes of pathological conditions; much has been done by the physician to enable him to prove the efficient guardian of the health of those who depend upon him; but very little has been done with any definite idea of trying to reach that inner realm of life, where the battle of life is won or lost, to study its ruling spirit, to attempt to know its nature and properties that may be developed or at least husbanded. Very little has been found out about it, and what has been ascertained has not been classified as such.

We might say, first, that it certainly exists in every living organism as a special and peculiar part of that organism. It is not only there, but it is different in the individual of the class, and no rule has been ascertained by which its qualities may be certainly known. In the human species there are many individual personal differences, even where the anatomical similarities seem to indicate that there may be two identically alike somewhere. No one who has thought about it wonders that temperament, sex, race, environment, and other influences produce dissimilarities in individuals that widely separate them. Even the recognized force of heredity is not proof against this individualizing power, whatever it is, and we find dissimilarities so marked between those closely allied by blood that they are incongruous. So much is this true that while the power of probability is quite confidently relied upon, still we must in the end recognize that breeding, like chemistry, is an experimental science, the results of which you may never know until you have obtained a practical result; but, unlike chemistry, you cannot repeat any definite achievement. And, therefore, no one should wonder when we suggest that this elusive health principle, though resident in every one, is individual in each organism of the human family. We hear it said that size, everything

being equal, gives strength, and yet we know that everything else is not equal, nor can be. The physician cannot tell where or in whom he can find a certain co-operative force, but he recognizes it when he does find it, and rejoices in its potent assistance. A large person is apt to assume that because his typical demand has carried him beyond his fellows in size he may look with scorn upon one whose littleness makes him sensitive to comparative references, but everybody knows of illustrations from life wherein the giant has failed in feats of endurance when the middle-sized man has held the same strain lightly upon his shoulders. 'Speculations abound regarding the part that the color of the eyes or hair, the smoothness or roughness of the skin, play in settling this question, and about the time that speculation concludes with certainty, a fact from real life knocks the conclusion all to pieces. A great coarse man, knotted with muscles, covered with curled hair like a bull, glories in the puny effect that privation has made upon him. That same man may survive the rest of the crew cast away at sea, but many instances have told the utter unreliability of such confidence. The learned doctors tell us that the system of the chronic invalid has become so inured to unsanitary conditions, partial suffocation, or like strain upon the constitution, that he will survive those who have not had the training of privations to fit them for the task; but about the time you accept this plausible solution to fit a certain case, you hear the profession say that a certain locality has had such a depressing effect upon its inhabitants that it is no wonder they died like sheep when the pestilence came. All the theories regarding the quality of this power in the individual have failed about the time they were substantiated, if not before. The best we can do is to admit that each has it and that its properties are proved by actual results, and then acknowledge that the results are about as lasting as the tracings on the sands by the sea. While we cannot prove it, we must believe that size and sex, age and action, afford a basis for present probabilities, but for certainty against all emergencies there are no infallible cognitions. We are forced to admit as true what all must accept, that in this as in all else each man is an individual with enough that is common in him to establish his kinship to the rest of the human family, but represents after all a most carefully differentiated individual by a thousand indisputable tests.

So much for the principle itself. It exists, and when strong it

holds us up, and when weak it fails us in the time of need. Every man is a law unto himself with regard to its quality, and no analysis of laboratory, nor investigation of microscope, nor refinement of human judgment has ever been able to measure it unerringly. However, we are not entirely in the dark. There are some things we may know and confidently rely upon for all practical purposes. In the first place, this health principle will bear no codling without proportionate loss of power. Hard usage, if it is not too hard and too long maintained, seems to be its best treatment. When you are tired you lie down to rest, and nature is grateful for the opportunity to restore the tone of the associated parts called the system, but if you stay in bed long after the time necessary to recuperate you begin to make inroad upon the fibre of your physical constitution. How much this law of use and disuse enters into the realm occupied by this health principle is difficult to determine, but that it plays a part cannot well be doubted. It must be remembered that the two sides are equally important. It is just as necessary to use enough as it is to not disuse beyond the proper point, and the nicest judgment is required to steer unerringly between the two in every case. Strange to say, in the wisest application of action, each would better be trusted to direct for another than for himself. Therein is found the most powerful reason for the existence of the family physician, because, apart from any benefit he may confer by reason of his scientific attainments, he views the organism, knowing its special weaknesses by frequent and interested observation, from another and outside viewpoint from the man himself, and is therefore better able to advise.

Not only must overkindness be avoided to foster this health principle, but it is known that getting close to nature helps. This phrase, literally interpreted, means to get out into the sunshine, where the air is nearest to its ideal composition,—oxygen one and nitrogen four parts,—and then do something to promote activity among the vital processes. The trouble about most people is that because certain functions were set in motion before intelligent perception was enthroned, they never seem to realize that they either should or can take any part in their special performance. Ask any pulmonary specialist how many human lungs he ever examined whose every air-vesicle was habitually or even occasionally brought into highest functional activity, and hear him reply: “None or next to none.” Therefore, when you have gone out into the pure

air, where you will necessarily use an improved quality of air in your lungs, you have not done your whole duty until you have caused by intelligent direction every single air-cell to be stretched by many full inspirations. And if this is true when you have the very best quality of air, what reason can there be for not doing the same all the time with the best you have? Indeed, is not the demand more imperative when you have an inferior quality? Remember that there is no atmosphere, however much vitiated it seems with matters that offend the eye or nose, that is without the health-giving oxygen, which endosmosis will separate and load on to those willing carriers, the red corpuscles, and they in turn will feed the hungry molecules within us if they have half a chance. If mankind were well and happy physically only when supplied with ideally pure air, then this race would be born only to die again. If the filter-plant of osmosis were able only to handle pure air in the lungs, if the average individual could not withstand the relatively small imposition of the ordinary city air, then it would not take a learned mathematician to compute the number of breaths in the world.

In addition to these reflections upon air and breathing as adjuvants and fostering influences upon our health principle, why might we not as wisely speculate upon the use of sunshine? We all know what bleaches the felon in the murky jail and causes the pallid features of the bedridden invalid, but we do not associate the two results as identical except upon plain reasoning. We say confinement causes the one and sickness produces the other, but we fail to fully realize that while different causes are at work similar consequences are coming to view, and we know that while sunshine may not be able to alone cure the sickness, it will certainly relieve the pallor. Therefore, it is the part of wisdom to not only go into the sunshine, but to put yourself in proper relation to its health-giving power. Most of us look upon the sun-bath as the fad of a quack, as it is ordinarily presented to our minds, but no man who thinks with the mind of a doctor can doubt its efficacy. In fact, no one knows the limit of power of these natural agencies when brought to bear upon the organism suffering from the baleful influences that form so great a part of our false living. The wonder is not that so few have perfect health, but that any at all come anywhere near the proper standard of normal function, beset as we are from our cradles with ignorance

and sloth and all the devitalizing influences arising from both. How many infants are allowed to enjoy the naturally normal tone of the newly born? The thousand and one interferences with proper vital function that are forced upon these little strangers have engendered a superstitious belief that babes are born reeking with all manner of infantile perversions. The average nurse (much more the average young parent) believes every child is born ravenously hungry, and interprets his involuntary commencement of his physical development into a series of frenzied efforts to rake in the whole world and straightway swallow it. How long do they have the privilege of being let alone at least? Who ever heard of even a learned doctor who would patiently wait for time to develop hunger in an infant, as he knows is necessary in every other organism? No; the usual plan is to go to work upon the first squall to force down his innocent throat, if not some vile decoction, certainly an aliment that he cannot digest any better than he can digest a stone. Anybody would stand aghast if you suggested to put his little mind studying logarithms or the intricacies of logic, but no one seems to think that his digestive apparatus is, in parallel, just as rudimentary as his brain development. Colic? Of course, he has colic. Weak as he is,—because he is such a little bud of humanity,—the health principle in him makes a strenuous effort to rid him of those vile offenders which have been ruthlessly forced down him. There are grown people who unaccountably believe that anything that can be swallowed, even if it takes several attempts to accomplish it, will be in some unreasoning way digested. How often did you ever hear of mothers—God bless them—poisoning their own infants by chewing up some food fit only for their own adult digestion, and by persistent efforts getting it down those little throats? And then they walk the floor (for they cannot get others who shall be nameless here to do it for them), upheld through the long nights by a devotion worthier to be sung than any endurance exhibited on a Polar expedition. But, oh, the pity of it. If the health principle were not strong within us, if we could not withstand impositions from the first hour through our lives, none of us would ever live to vote, much less live to be President of these United States.

And then there is another natural remedy that is not appreciated at anything like its true value. It is water. Water, the greatest component of proud man,—and we might say peerless

woman, also,—is not only priceless in value, but valueless in price to most of us, from the high estimate that should be put upon it. It should be used like the old fellow said whiskey should be to get the proper benefit from it, “Externally, internally, and eternally.” It is Nature’s great solvent. We very naturally turn to it to remove almost all the defilements of life. But for its value outside, its greatest value and highest worth comes from its marvellous utility inside the human organism. It is the great menstruum and diluent of all the fluids of the human body. It is the great cleanser of every excretory gland, the great flusher of the myriad sewer channels of our personal municipality. Its great importance may be fairly inferred when we compare the desiccated body—a mere handful—with the weight taken in full health. If the Creator found it necessary to utilize so much water in our composition, why do we cultivate almost a hydrophobia all our lives? Again, we are reminded that the use of water to any large extent as a remedial agent is popularly relegated to a special kind of doctor, and a plea for its more generous, more intelligent use will be taken as a suggestion for hydropathy. Not so. But we believe that we are regularly making specimens of arrested development of our children and needlessly hindering a proper action of our own organs by our senseless disregard of one of Nature’s best gifts to man. We habituate ourselves to do without water until we actually believe it is best to live on half-rations all our lives. Again we say if we could not stand up under countless and constant impositions we would soon put on immortality. Every now and then some crank—a man who does his own thinking—gets upon a house-top and shouts aloud the marvellous benefits he has received from the intelligent use of one or all of these natural blessings, and we shake our wise heads or tap them significantly with a nod towards the speaker. Should we need argument to convince us of their usefulness? It would be enough to put any of us on the witness-stand and let the result depend on our own responses. Every bacteriologist knows that moisture is just as much a vital necessity to any germ—the black devil of the present age—as it is to have heat or food to sustain its life. Then why is it unreasonable or illogical for us to declare that its abundant use—following after nature—would be the highest wisdom?

Let us devote a few moments to another phase,—that of the use of what might be called the unnatural remedies in their effect upon

this health principle. In the layman's mind there is absolutely no doubt of the power of drugs to produce a cure. To cure a disease by means of drugs seems to him no more wonderful than to patch up a piece of china with a little cement. We wonder if such a frame of mind is altogether peculiar to the layman? Does any one here happen to know of a doctor who seems to believe in the infallibility of his own prescriptions upon all—save himself? There is a time-honored saw that says, "No doctor takes his own medicine." If there ever was enough of basal truth to give that maxim life enough to live, why has it not proved sufficient to raise a broader question in the minds of the best of the profession? Who can say that there does not exist in the minds of the best doctors to-day much strong conviction that drugs of themselves are not to be depended upon? And this attitude of mind is not new. Your own Dr. Oliver Wendell Holmes is recorded as saying, "Nature cures; Art helps if she can, but oftener hinders." Upon the last analysis is it not true that drugs must forever be foreign matters to our economy? Are they not irritants, as it were, producing reactionary efforts on the part of this very power of which we have been speaking? These efforts may result beneficially, and for that reason we may not deery them, but as to their intrinsic nature and effect are they not in a sense the lesser evil, at the highest valuation? A spur to a horse may quicken his vitality, but the horseman who wishes to go a long journey knows he must beware the early and inconsiderate use of the spur. Indeed, to declare the constant use of the whip as necessary would not be considered good horse-trading sense. The "fear of punishment or the hope of reward" might be discussed in other places than our country schools. We cannot but believe the punishment produced by the more or less incongruous drugs may be at times beneficial, but, as a rule, the parts of the system have their work cut out for them to recover from their demoralizing effects. We do not wish to be thought as setting ourselves up against the intelligent physicians or as declaring war on the doctors without discrimination, but we want to ask of each practitioner how many so-called doctors he knows that he would not trust himself in the hands of unquestioningly? And the fundamental reason for his lack of faith in the individual is due to his unconscious admission that there is little if any faith to be put in a mere drug that is capable of harm. We are well aware how delicate this topic is, how difficult it would be

to defend one's self in court against the almost unanimous indignation that might blaze up, but we mean to settle this suit before the tribunal of every honest thinker's consciousness. Let him who can deny its probability in the quiet chamber of his own soul, who can say that he unqualifiedly believes in the dogmas of the doctors, be the one to cast the first stone. Of course, the practice of medicine is valuable to the world, both because of the helplessness of the average inhabitant without it and because the intelligent physician earns his fee and more, as we have already said, by judicious advice and services, but after all it must be forever a system of playing upon the health principle within us. And therefore, so long as man is man, incapable of doing his own thinking, the race must struggle along from births to deaths, enduring the blunders at home and out of it and blindly expiating a thousand crimes against the heaven-given guardian presiding within every living organism.

One word in application to our own specialty, and we have finished. What has been said generally is true specially, although from the nature of the tissue involved it is not always so easily manifest. Long years ago our theory of dental caries was a chemico-vital breakdown of the teeth. We fancy we have gotten away from that definition in this enlightened age, because we have been able to find the germs and their acid by-products as sufficient causes for discerned results. But chemical action is still recognized, and the modification due to the presence of vitality, let us call it, is also admitted in the best observations of our laboratories. In miniature and in modified measure we can discern all the pathological changes in tooth-structure that are recognized in soft tissue. Response to the causal irritant is none the less certain because in hard tissue the cardinal symptoms of inflammation are necessarily modified by that structure. And the presence and power of the health principle in teeth may be as unquestionably shown in them as in other parts. Immunity from caries, so abundant in some, yet more or less present in all mouths, cannot be due to the absence of germs, for they are present in all oral cavities. Some teeth, we say, resist better than others, and let it go at that, but what enables them to resist? In the same line, why does the epidemic fail to affect all, or doctor and patient alike? What is vital resistance, if it is not the power that we have been discussing?

Again, when the teeth are involved every dentist knows that some unconditionally yield to harmful causes, fail to be benefited by the same reparative measures that are successful in others, and in many ways show a lack of a health principle. In others, in the same professional hands, the opposite is true. Yet, mind you, the germs—the causes of disease—are present in every mouth, and the human mouth is known to be the ideal incubator, with heat, moisture, and food always present. What is so-called secondary dentine but a provisional wall built against the irritating approach of disease or the presence of a foreign body put there as a safeguard against other intrusions? We see all the time the greatest anomaly of all surgery,—death tolerated more or less kindly by living tissue,—and yet we ask to be shown some open evidence of the practical presence of the health principle, so easily seen elsewhere. Dr. E. S. Talbot says that “auto-infection” is the cause of “interstitial gingivitis,” and if there is a better explanation of pyorrhœa alveolaris, if you prefer that name, we are not aware of it. Self-poisoning is not only possible, but almost unavoidable, especially if we fail to use what nature and art have placed at our disposal, as most of us do continually. Verily, there’s no health in us, despite our health principle, because that is true. But what suggestions are embodied in the best treatment of the disease referred to? Fresh air, generous diet, pure water, and the generally bracing and uplifting results of an ocean voyage are all adjuvants that all agree and rely upon to aid our best efforts otherwise. These are the very agencies which have been indicated as the best methods to sustain and develop and co-operate with the health principle. In conclusion, we affirm that whether we believe it or not, whether we can admit the tangibility or not, there is a health principle, and its intelligent study is the essence of that classic injunction, “Know thyself.”

AFTER SIX YEARS OF DENTISTRY.¹

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IN a retrospect of my experiences of a brief period as a dentist I am confronted with the fact that most of my methods of work are entirely different from those learned at school and constituting my armament when migrating therefrom. Any wide-awake man who practises our profession to-day must be impressed with the reality that modern dentistry is making more rapid advances along all lines than any other profession. By modern dentistry I mean that advocated and practised by the most progressive men. There is a large percentage who reached the acme of their career long ago and are content to practise the modes of their fathers.

I am intensely proud of my occupation, and while there have been times when I have coveted the medical training, I have come to think that the successful all-around dentist has about all he can attend to to acquit himself creditably in his own line of work. Our school courses are of great help, but, after all, success lies in the man himself, and not in the school product. The dental graduate as he emerges from school is just on the stepping-stones of his activity. With the instruction received from school, that which the graduate needs more than all else is experience and a superabundance of good sense or judgment,—“horse sense,” if you please,—the power of discrimination or applicability of the proper method of procedure.

Thrown upon one's own resources, he meets with success who possesses the faculty to diagnose properly a case and has at his disposal various ways of accomplishing his end. That man makes no marked success who considers that the knowledge absorbed at school fits and equips him for future time.

Dentistry is changing so rapidly to-day that one must almost lie awake nights to keep abreast with the presentation of new and the overthrow of well-established ideas.

As a continuation of one's dental education post-graduate courses are available, and should be grasped by all. These are largely in the shape of dental meetings and magazines, and he who does not profit by these helps cannot expect to reach the front.

¹ Read before the Harvard Dental Alumni Association, June 22, 1903.

Are we readers of the best dental magazines, and do we read them in their entirety? Do we omit some articles because too dry and scientific? If such is the case, persistency should be maintained until a taste is cultivated for these. The National, State, and other dental meetings of the year are invaluable as furnishing yearly new thoughts and methods and affording a periodical stimulus to other work. Having endeavored in every way to continue the pursuit of dental education, and in so doing, by absorbing new ideas and in following out certain ways which have been practised, the writer would suggest some helpful methods adopted to-day as a result of a limited experience. All this by way of introduction.

In operative dentistry I have come to think that the fewer the instruments the better. Having been taught by some to use the rubber in most all cases, I now find it necessary to use it only in connection with certain gold fillings. I do not deem it essential to ligate always the teeth involved, and especially the double ligature. Neither do I see the appropriateness of the ligature instrument suggested in my school days. That might answer for teeth with pyorrhœa pockets, but not for the closely hugging gums usually encountered. The Libby flat burnisher serves my purpose to best advantage to carry silk under the gum. Cotton rolls made by twisting a tuft of cotton on a dampened pointed orange-wood stick used in connection with a suitable clamp for retention, together with a matrix when indicated, permit to do all treating and filling, gold generally excepted. With frequent changes of these rolls, the field of operation can be kept dry as long as desired.

The treatment of teeth in all its phases is the most critical and exhausting, and requires as much skill as does any dental operation. No work is so shiftlessly performed by practitioners as a whole. There is no short cut to successful treatment. It is frequently a question of hours to accomplish, and just and commensurate remuneration should be received. I do not believe in any mummifying method. To mummify is to shrink or contract with the consequent space between the shrivelled remnant of pulp and tooth walls, which space serves as a receptacle for serum and gases from the apical region. Well-known results follow this condition. Mummifying may do for subjects which are to remain in non-active surroundings, but not for teeth with vital surroundings. Undoubtedly this method does work well for a time, but I cannot

but think it has a time limit. A clear field, clean broaches, thorough mechanical cleansing and removal of all remnants of pulp or débris from all canals as far as possible, thorough disinfection, and stopping of canals with antiseptic root-filling has met with reward as to permanency of results. In pulpless teeth, with the pulp-chamber well opened, not access around the corner, the location of canals in view, those not readily cleansed by broaches and neutralized dioxide, can be entered generally by sulphuric acid and a smooth broach if patient and persistent, the sulphuric acid to be neutralized after using with bicarbonate of soda, although I think that the lime-salts of the tooth neutralize and limit its action to a great extent. Suitable smooth broaches for the work can be obtained for five dollars per gross. Incidentally I have found that economy should not be exercised in too long retention of broaches. Discard and take a new one before it is time for the old one to break. Broaches are dipped in carbolic acid and passed through the flame before using.

As stated before, peroxide is my regular canal cleanser. I like it because I can see it work, and it throws out of the canals the débris by its effervescence. Canal dressings are eucalyptol, beechwood, creosote, and formalin,—eucalyptol, or eucalyptol and formalin, in anterior teeth; the same, or creosote, with or without formalin, in posterior teeth. And in stubborn cases forty per cent. alone has proved efficient. When a pulpless tooth is first opened and cleansed, it is stopped with cotton, then cotton and varnish, and finally gutta-percha, or temporary stopping.

I wish to say that, contrary to the practice of many, I use whatever drug is most efficient for the case in hand, iodoform not excepted. I do not consider the fastidious olfactory sensation of my patients if I am using, to my mind, the best means to an end to effect a permanent and speedy cure. I do not believe that my practice lessens materially because of this procedure.

Chronic abscesses of anterior teeth with fistula are treated by cleansing with peroxide through the teeth, and that followed by chloropercha. If the case fails to heal, the opening is packed two or three times with twine dipped in eucalyptol to enlarge. Then, with a cross-cut bur, the end of the root or neighboring bony tissue is removed to a slight extent and the healing process generally takes place. I do not see the need in so many cases of using a large bone trephine or bur, and removing as much sound or dis-

eased tissue, possibly the apex of a neighboring tooth, and subjecting the patient to considerable unnecessary pain. So much for the pulpless teeth.

Now to those with pulps or partial pulps. When to devitalize. If the cavity is presented and the pulp is exposed, devitalize at once. I do not cap. If I have capped, I uncap later. If tooth has ached to any extent, especially at night, or except from local irritation, I devitalize. The pressure method, with unvulcanized rubber or yellow wax, large instrument as plunger, crystal of cocaine with drop of alcohol or chloroform is used almost entirely to anæsthetize preparatory to the removal of pulp. By this same method an equal mixture of carbolic acid and chloroform instead of cocaine works quite as satisfactorily. One is better in some cases than the other. That annoying particle of sensation at the apex of the root can ordinarily be removed by pumping carbolic acid and chloroform into the root with a smooth broach. A new barbed broach is always used to remove a pulp. Applications of arsenic or fibre are seldom or hardly ever used. Having tried all suggested methods for painless results, the pain invariably does follow an application in molar teeth. An application of arsenic or fibre as an obtundent for a short time, followed by cocaine and pressure or cataphoresis with cocaine to obtain clean-cut exposure, then by cocaine with pressure, has met with good results. Except when the pulp is congested, in which case most any method is painful, the pressure method seems to be ideal. Pain in this process results often for the want of an actual exposure. The mere film of dentine over the pulp, although it is flexible, is a barrier to the ready transfer of the cocaine. If the pulp can be made to bleed a little, the method will work to perfection.

FILLING ROOTS.

When the pulp is detached entire and but little or no hemorrhage follows its removal, fill the roots immediately. My experience is that immediate canal filling is seldom advisable in molar teeth, as one cannot remove all the remnants of the pulp at once. Those minute canals are not so easily untenanted and require much time to cleanse and disinfect. If a canal is so fine and tortuous that I am conscious that I do not penetrate to its end, even with sulphuric acid, I rely upon repeated dressings to disinfect and saturate the root previous to its filling. The root-filling consists

of pink gutta-percha, because of its color, which can be traced in drilling for a post, or in case of removal. This is dissolved in chloroform, cajeput-eucalyptus, with the addition of hydronaphtol, oil of cassia, and iodoform. This is always heated in a water-bath just previous to using, to render it of a creamy consistency. Peroxide is used first, then alcohol, and finally eucalyptol, after which the canal is dried with hot air. The root-filling is pumped into the canals with a smooth broach, not a barbed one with a shred of cotton on the end, as this acts too much like a piston and is too liable to force the chloropercha through the apex. The eucalyptol left in the canal acts as a lubricant and helps the chloropercha to follow to the apex. When reasonably sure that the canal is filled, a point of gutta-percha of the appropriate size is used carefully as a piston, and then left to furnish a hard centre of the root-filling. These gutta-percha points, by the way, can be made very nicely by rolling out small pieces into long cones pointed at either end on a heated tile, and when cold cutting in the centre.

I wish the tooth or surrounding tissue to present or have presented no soreness for some days previous to the root-filling. I desire to let not more than a week elapse between the changing of the dressing and the root-filling. In most all cases of trouble with "teeth said to have been treated," the cause of the soreness or pain is evident upon opening into the tooth. Fillings over uncleansed pulp-chamber, uncleansed canal or canals, unsought canals, cotton in roots, are among the disclosures met daily. Cotton left in canals in this day is work open to the highest criticism, and teeth which do not evince the most careful work in their treatment to-day are signs of a shiftless and unscrupulous workman, who, from an ethical or non-ethical stand-point, is open to censure.

CHILDREN'S TEETH.

These teeth, as well as their possessors, are frequently hard to manage. Crown cavities, after excavation, are coated with nitrate of silver and filled with amalgam; proximal cavities are treated in the same manner and filled with cement and amalgam. If the pulp is exposed, anæsthetize with carbolic acid and chloroform, open up, remove the pulp with a large spoon, check hemorrhage, and fill with chloropercha, saturating a tuft of cotton with this and leaving it in the tooth, covering this with gutta-percha, and completing with cement and amalgam. If the child is young and

restless, merely coat with nitrate of silver, or use Ames's black oxyphosphate of copper. The cavity need not be wholly free from moisture in using this. I have had no success with capping children's teeth. I do not use cement or gutta-percha as a filling-material for these teeth. If the tooth is pulpless, and there is a fistula established, peroxide and chloropercha forced through the fistula is the remedy. The engine is used early with children to dispel the fear of this contrivance.

CAPPING FOR OTHER TEETH (WHEN INDICATED).

It is used in cases where the cavity is near the pulp, but not an exposure. It is a precautionary or decay-restraining step, if such is possible. The capping consists of jodoformagen and iodoform powder, equal parts, mixed with oil of cloves as the liquid. Some of this powder and liquid is placed upon a tile, a small thin spatula heated over the burner, the mixture made and applied to the floor of the cavity with a small piece of cotton held in pliers. It will harden quickly with hot air. In case the floor of the cavity is thin, a coating of cement should be flowed over before regular filling.

FILLING-MATERIALS.

Gold and cement, amalgam and cement, porcelain, oxyphosphate of copper, very rarely gutta-percha, no cement. More and more, porcelain, except gold, appeals to me to be the material to be inserted when the cavity is accessible and of a moderate size. If not accessible, a plastic is preferable. For the past year I have used almost exclusively porcelain, except gold and amalgam in combination with cement, and have relied upon the cement to retain the filling. Practically no other means of retention is obtained; scarcely a groove or undercut; only a good depth to cavity is desired. I know that idealists depict cavities so shaped with broad cervical margins and self-retentive proximal walls that no grooves or undercuts are necessary, but the ordinary practitioner, methinks, to be on the safe side, will remove a little dentine along those same proximal walls, just as a precaution, as there is a desire that the filling "stay in," even if the tooth has to be cut overmuch to hold it. With the combination filling all decay is removed, and the edges smoothed and polished. The cavity is wiped with carbolic acid and alcohol, or carbolic alone, and dried with hot air. No lining is used, as I do not believe that the phosphoric acid

in the cement has any decided action on the pulp. The matrix is used in most all cases of proximal cavities. I like Hood's matrix metal, cut to proper size and held in place at the cervix by a pointed toothpick, and about the circumference or margins of the tooth by an ivory clamp when cement or amalgam is used. With gold, a large piece of pink gutta-percha is softened and placed on either side of the tooth against the matrix metal, and held by the jaws of the clamp. The gutta-percha holds the metal in place and also prevents the clamp from pressing upon the gum, so that the clamp can be used to rest the finger upon in condensing the gold if desired.

METHOD OF INSERTING AMALGAM AND CEMENT.

The amalgam is mixed, and in some cases, according to Dr. Clapp's method, a wall is built against the matrix and carefully pressed against the proximal margins; then some soft cement is placed with a pointed instrument into the pocket between the amalgam and the floor of the cavity; then amalgam is worked into the cement and the filling built up to contour. A broken-backed explorer with the point ground off makes a very useful instrument with which to convey the cement to the cavity. Another method is to place the cement in the cavity at first, then press the amalgam into the cement, letting the cement ooze out to margins, and while soft scrape off the surplus cement, adding the remainder of the amalgam to complete the contour. If doubtful of the margins, remove the clamp, turn back the matrix, and add amalgam to margins. In coronal cavities line with soft cement and work amalgam into same.

GOLD FILLINGS.

No tooth is too soft or frail for gold and cement that one would restore with cement alone. Gold will protect and preserve the margins of a frail tooth better than any other material. With cement and gold, the floor of the cavity is covered with soft cement and immediately some De Trey's gold is worked into same, to cover all the cement. This is allowed to harden for about five minutes, and then condensed. The cervical and proximal walls are then cleansed and the matrix applied. Tin and gold, if not afraid of discoloration, or non-cohesive gold, is first used at the cervical margin, followed by some De Trey's gold. The proximal walls are then built up of Shumway's gold cylinders, because of their pliability or plasticity, sufficient force being exerted to head the matrix from

the edge of tooth and leaving gold to be burnished down to margins in finishing after matrix is removed. The filling is finished by burnishing to margins with an Ivory point. In condensing the gold the Darby Perry No. 17 plugger, because of long shank, and one made with same point, but on an obtuse angle, are my most helpful pluggers. The Hopkins pluggers, if kept blue, make very good burnishing instruments. I use all plugger-points as much with a sliding motion over the surface of the gold, really burnishing it, as with the regular plugging action. No one variety of gold is used, but several kinds in the same filling if I see the appropriateness of them.

ADVANTAGES OF CEMENT IN COMBINATION WITH GOLD OR AMALGAM.

The pain of excavating is reduced to a minimum. The proximal walls are not weakened by grooves inviting redecay. Gold can be inserted anywhere in anterior teeth where one would use cement. No discoloration follows the use of amalgam with cement. A partial non-conducting lining of cement is used under all metal fillings, a broad floor of gold covering the whole surface of the cavity to which to build. No rocking of gold after starting, no building of cervix down to cutting edge before one is sure that filling is locked. The burden of filling is much lightened. The mistake in this method is to proceed with the filling before the cement is thoroughly set or crystallized, or to use it in corners of anterior teeth with no surrounding walls. It can be used in practically saucer-shaped cavities, but depth is necessary. In excessively sensitive posterior teeth with little wear oxyphosphate of copper serves a useful purpose. This is applicable to buccal cavities and fissures, and also to non-erupted wisdom-teeth. It can be applied in a creamy state, and will flow along the fissure, when a puff of hot air will cause it to set immediately. In case of removal or renewal the cavity will be found less sensitive.

Porcelain is used in anterior teeth when the patient is desirous of same and appreciates or can be made to appreciate the work. This is the nicest work possible if perfect, requires the most patience and skill, and is fraught with much disappointment, but there is a growing demand for it, and everybody should be able to do it well. The common excuse, "no call for such work," is hardly a safe or proper platform on which to stand. I have not reached that stage when I advise the removal of a perfect gold proximal

filling in order to insert possibly, though not probably, so good a porcelain filling, because of the color of the gold. There are two exposures of an anterior filling,—the labial and palatal. A proximately perfect fitting labial surface of a porcelain filling with an ill-fitting palatal surface is not equal to a well-burnished tight-fitting gold filling upon both aspects. Tooth preservation is as important as æsthetic considerations. The wholesale removal of metal fillings and substitution of porcelain is open to criticism. I employ two different kinds of porcelain fillings. For anterior teeth generally the light-fusing bodies are used, and an endeavor is made to match the color as nearly as possible. For cervical cavities of bicuspid or molar teeth the color is not as important, and porcelain can be used, even if not a perfect match, as one would use cement. It can be used here because of ease of manipulation, shortness of operation, and avoidance of cervical clamp in case of gold filling and because of non-conducting qualities of body. In such class of cavities I use Jenkins's body and gold matrix. I confess to little success with this body because of inability to retain the color. With all care I find that it bleaches in melting. Where the color is not of prime importance there are two or three different methods for its use. An impression can be obtained with No. 30 gold with spunk and wet cotton ball, invested and filled with body, and baked, etched, and set.

ANOTHER METHOD.

Gold is adapted to the cavity with spunk and a wet tuft of cotton, then softened pink base-plate gutta-percha is pressed into the cavity over the gold with the ball of thumb and burnishers and allowed to harden, maintaining the pressure to obtain well-defined margins. When hard, remove and invest; when investment is set, heat a little to soften the gutta-percha; remove, fill with body, and proceed as usual. The results are very satisfactory.

A METHOD FOR THOSE POSSESSING NO FURNACE.

Obtain clear-cut impressions of cavity in quick-setting cement. When hard, place in ashes or similar plunger swager, using water-bag or plunger of unvulcanized rubber, place over impression a piece of No. 30 gold and swage. Over this place a piece of mat gold and reswage; a second piece of mat gold can be added and swaged again. The stiffened matrix can then be removed, held

by the edge with pliers, filled with body, and the inlay baked over an ordinary Bunsen flame. If more gloss is desired, hold face down over flame for a moment. Peel off matrix, etch, and set. Where the color is of prime importance and I desire an exact reproduction of sample shades, I have had better success with Whiteley's and White's bodies. The possession of these, and others made from these, give a wide, adequate, and stable range of colors. Porcelain is equal to corners, if not a close square bite. No undercuts are used in inlays or cavities. A deepened cavity and etched inlay held in place when cemented, if possible, by a wedge for some time, and covered with paraffin to exclude moisture, seems to be equal to the demands. For proximal cavities a generous separation is essential to a perfect and unchanged matrix. I find I can handle $\frac{1}{1000}$ platinum as easily in most cases as the No. 30 gold when cavity is accessible, and the stiffer matrix is much more satisfactory. The color question, although the tooth is well matched to a sample shade, is a problem. The cement will change all inlays somewhat. A color somewhat lighter should be chosen. This problem can be solved to some extent by building in layers according to Dr. Reeves's method, with the yellow bases and overlying enamel color. In large proximal bicuspid fillings there seems to be a great tendency for the body to shrink and draw the platinum with it. I have found that a White's or similar tooth, crushed and powdered, and used as the foundation in fusing, and then burnished and finished with the enamel coloring, corrects the shrinkage. Used discriminately, the porcelain filling should be one of the available materials of every dentist.

The regular oxyphosphate filling has no place in my list of materials. I use this extensively to cement, but not at all as a cement. I think that we do not begin to rely sufficiently upon the strength and range of usefulness of the adhesive qualities of cement. The oldest porcelain workers claim that redecay does not occur under a porcelain filling. Now, surely there is nothing in the nature of porcelain itself which has this retaining influence. It is the manner in which the filling is inserted, the plastic cement permeating every nook and corner under the inlay. If such is the case, why not by skilled manipulation, with our combined cement and metal fillings, our porcelain fillings, our gold or cast inlays or shell fillings, follow the plan of having all fillings inlays? As a filling-material I believe that cement causes

the loss of more tooth-substance than it saves. It is short lived, unsatisfactory, unprofitable (for the patient, and this should be considered), unsightly, treacherous, and unstable. Very little dependence can be placed upon it. I now fill all children's anterior permanent teeth with gold or porcelain fillings in preference to cement. Gutta-percha is seldom used as a filling-material. To be sure, the pink gutta-percha will preserve the teeth and prevent decay, but this material is unstable, unclean after a season, it wedges the teeth apart, and causes recession of the gum and absorption of the alveolus in proximal cavities.

Until recently corners of anterior teeth, especially lowers with pulps and without, were a source of trouble to me because of inability to secure the necessary retention to withstand the force of occlusion. Now a gold inlay simplifies and makes a substantial restoration. It is, in fact, a miniature crown, and possesses the proportionate strength of such.

METHOD OF CONSTRUCTION.

In a live tooth the cavity is prepared with no undercuts, the margins are smoothed, and a hole with No. 1 or No. 2 round bur is drilled in the seat at the cervical margin in the dentine parallel to the pulp-chamber to the depth of about one-sixty-fourth of an inch, or deeper if admissible. The palatal cutting edge of tooth is ground on a bevel and another hole drilled there between layers of enamel in dentine of a slight depth. One one-thousandth platinum is burnished to cavity as for an inlay, then platino-iridium wire, about 18 or 20 gauge, is pushed through the platinum and softened separately with platinum solder. I find the Turner blow-pipe ideal for melting the platinum solder. When both pins are soldered, replace the matrix and thoroughly reburnish, using tape to hold platinum in contact with entire edge of cavity to prevent springing. Remove from cavity and engage one of pins in points of clamp pliers. Cover end of pliers and inside of matrix with whiting and water, dry out slowly and build up to proper contour with 20- or 22-carat solder, finish to size and cement in place. The solder for this work is prepared by fusing into globules with borax as flux, and applying these globules of solder when they are needed for fulness; pitting is obviated by so doing. In a pulpless tooth one large piece of wire inserted in canal is used.

CROWN- AND BRIDGE-WORK.

I do not insert a bridge unless there is a great need for it. I have no desire to mutilate a sound tooth as an abutment unless it is very imperative. I have practically abandoned gold crowns except in bridge-work. I use a hand-carved porcelain crown instead. Gold crowns as generally constructed are unhygienic and irritating to the gums, causing a recession of the same. This can be said of banded crowns. Formerly the Logan, and later the Davis crown were used most extensively. The Logan crown is good because of the strength of the porcelain and natural shape. The weak point is the post, which is prone to bend or stretch under the outward stress of mastication. A good joint at first on the palatal aspect becomes poor later because of bending of pin. Why the crown is not made with a platino-iridium post I fail to see. The time to secure an accurate fit is also a drawback with the Logan crown. Now a home-made crown on both posterior and anterior teeth is generally used. Carving teeth, which I always thought a difficult task and reserved for the gifted few, is not as hard as it seems, and can be accomplished with persistence by all.

METHOD OF CONSTRUCTION.

The root or roots are ground above the gum labially or buccally and palatally, so that the joint is above the gum to the fullest extent. Annealed platinum, about 36 to 40 gauge, burnished over end, and outline noted and platinum trimmed; the holes made for posts of platino-iridium wire from 13 to 15 gauge, canals drilled and posts inserted through platinum and soldered in correct relation with platinum solder. This plate and dowel is again carried to place and reburnished; impression and bite is then taken in modelling composition, and when the model is obtained the crown is built up in high-fusing body, using yellow as bulk and enamel color on outside. In molar teeth two or three posts are used. All-porcelain molar crowns are as strong as necessary, except in close bites, where little material can be used. In such cases the gold crown is imperative. In lower molars where the crown is all gone and the roots left standing independently, the all-porcelain crown can be used. The bridge across the gap can be spanned with platinum soldered to posts in the roots and crown built above. In case one or both are not on a level with the gum,

the posts can be inserted in the roots of the canal, and built up with amalgam. A piece of platinum with holes for the posts is burnished over the ends of the roots; tubes are then made to slip over the posts and soldered to the plate, and the crown built up, covering the tubes. In the upper molar by this method I have produced from one-half to two-thirds of the palatal surface, together with the crown, when such recession and absorption had taken place. I find the Turner gasoline furnace equal to all demands for porcelain work. Teeth prone to become loose and remain in this condition should have a fixed permanent support. I believe that in such cases any method of ligaturing is only a temporizing contrivance. I have found a good splint to be made as follows: holes are drilled with a No. 2 bur through the affected and neighboring teeth above the pulp-chambers and as nearly parallel as possible. Gold wires are inserted in the holes and an impression taken. This is poured with wires in place, and a piece of pure gold is burnished over the model, soldered to the wires, stiffened with solder, and cemented in place. A rigid condition of these teeth is obtained, which condition, I believe, is largely instrumental in enabling the surrounding tissues to resume their normal state.

I have been as successful in bleaching teeth according to Dr. Head's method of saturating a tuft of cotton with the agent and applying this to the outside and inside of the tooth, and then applying a hot burnisher to the cotton to drive the active agent into the tooth, after which the enamel of tooth is ironed with a warm burnisher. Three per cent. peroxide, evaporated in an evaporating dish until as concentrated as desired, has proved as efficient as twenty-five per cent. pyrozone. Oxalic acid has also been used. It has seemed to me that there are some teeth other than those infiltrated with amalgam stain which are unaffected by bleaching agents.

The engine has been abandoned in cleansing the teeth except in removing deeply intrenched stains at the cervical margins of some teeth. The orange-wood stick and Ivory's port polisher as a carrier for pumice are used altogether.

I am more and more impressed with the conviction that the professional side of our work is exaggerated beyond measure. While the professional attitude should be maintained as far as the ethics are concerned in a free disclosure of methods, fair treatment of a brother practitioner, etc., the business side of dentistry

should be more rigidly and systematically carried out. Few dentists receive fees which are commensurate with the best work. True dentistry is hard, skilful, tedious, nerve-exhausting labor, and should be rewarded accordingly. Our time is our capital, and in this respect it is different from most other professions. It is largely personal work, and cannot be relegated to others. I believe in charges for broken or unkept appointments when the time cannot be filled by another patient. The method of monthly bills for such part of work as is finished appeals to me and is appreciated by many patients. A big bill is harder to collect or even to pay.

OBSERVATIONS AND REFLECTIONS.

It is better to discard mouth-mirrors after they have become hazy than to injure one's own mirrors. The latter cannot be replaced. Magnifying mirrors are used too frequently when plain mirrors would better be employed. Burs do lose their cutting edge and must have substitutes. An inverted cone bur will cut out fissure in a tooth about as rapidly as any other. In drilling out a post in a canal it is about as safe to proceed slowly, using up a few burs and cutting the pin itself rather than drill around it to loosen it. There is too much danger of perforation. Loose teeth are not always pyorrhœa subjects. Take note of the tooth opposing and lessen the strike by grinding. Proximal fillings which have been made to knuckle will be found to be separating from each other unless the occlusion and articulation upon the fillings are rectified. A direct squint at the cavity or progress of the work is often better than a reflected view in the glass, and reveals some defect. Cleanliness in person, instruments, and office equipment is keenly observed and rewarded.

It is a pretty good plan not to despoil a tooth until by experiment one is certain that the plan to be adopted is sure to be successful. Patients desire and are willing to pay for the best work if they can be convinced that it is the most satisfactory step to take, and they are to be supplied with honest work. Frank, plain talks with patients relative to the teeth are invaluable. Punctuality to appointments is essential on the part of both patient and operator. A dentist's time and advice are as valuable as that of a physician. I do not believe in the rapid operator in dentistry. It takes time to carefully, thoroughly, and wisely prepare a cavity; it takes time to insert and finish to the edges the plastic in the

best manner; it takes time to condense fully the gold; and it takes time to finish the gold filling completely. It is not well to purchase every new device presented by the man who calls. The old one, to which you are accustomed, will work as well as the new. Do not jump at conclusions too quickly as to what is the best course to pursue. Think twice, and then think again, and then consult with another practitioner. Do every piece of work so that you are willing that your patient pass into another's hands; and such things happen sometimes, you know. Do not try to regulate the teeth without first making room for the new relations. Lack of room is the cause of condition as presented.

And now to come nearer home. I have wondered why it is that so few of our graduates attend the State and district dental meetings. Why is it that more of those connected with our school do not attend and become members of the National society? It has seemed to me that it behooved instructors and heads of departments in our school to get out of themselves and attend these National meetings and represent our school, and become infused with some new ideas other than those absorbed from this school. Local societies are well enough so far as they go, but they are circumscribed in their scope. If there is one weak point in our school system, it is that Harvard men impart only Harvard methods to our students. Now, there are constantly changing methods promulgated by men all over the dental world, and they should be demonstrated and tested here at the school.

How rarely do we find an Eastern man contributing to our dental magazines! In a recent expression of views on the value of the suction chamber, most every school had its contributor except the East. The lack of interest in other than local matters by our instructors and graduates, it seems to me, is a matter of regret, and one which should be corrected. It is a mistake to think that the best in dentistry revolves around this immediate vicinity. We should be elective in our study and practice, securing the best from all sources.

In these suggestions, together with more practical which have preceded in this cursory glance over my six years of practice, claim is made to originality in but few instances. If to any a kernel of help shall be found which can be utilized to lighten their labors, or help better their daily toil, the hope of the writer will be rewarded, as it was only to be helpful that consent was given to prepare this paper.

A PLATINUM AND PORCELAIN CROWN FOUND USEFUL IN CERTAIN CASES.

BY N. A. STANLEY, D.M.D., NEW BEDFORD, MASS.

I do not claim anything new or original for the crown I wish to describe; in fact, most new things are but modifications of something already in use.

A form of fracture occasionally met with is where the buccal cusp of the bicuspid has broken off, the pulp undisturbed and in healthy condition. We do not feel warranted in devitalizing and setting an all porcelain crown, much less should we resort to the inartistic, labor-saving gold cap. The facings procured at the dental depots cannot be used in connection with the cap without encroaching upon the pulp, or being too prominent.

To obviate these difficulties I proceed as follows:

After preparing the tooth a band or tube of platinum, 32 or 33 gauge, is fitted. It is well to have this strip of platinum a little longer than the circumference of the tooth; for in making the joint I usually make a short cut in one end to a line denoting the exact circumference of the tooth, insert the other end of the band, both ends having been brought to a knife edge, and solder with pure gold. You now have a joint that cannot change, no matter to how high a temperature it may be subjected. With a pair of plate scissors and small stones the occlusion is quickly adjusted, which should not be too close, as we must allow for a thickness of solder on the occlusal surface.

Next cut out the buccal surface to a line corresponding to the fractured surface of the tooth, the edges of which should be dressed down all they will stand, particularly the meso-buccal, so that the adjoining teeth may hide, if possible, the line of union between platinum and porcelain.

Solder a piece of platinum to this surface, always using pure gold.

Up to this point the process is quite similar to that used in making the jacket crown described by Dr. Capon, of Toronto.

Next, a piece of platinum is soldered to the occlusal surface. It will be seen that it is well to have the part which is to protect the porcelain extend a little beyond the cusps of the adjoining teeth. This part of the platinum is now bent so as to correspond

in length to the adjoining teeth, and can be reinforced if desired with a small piece of platinum. Now solder a small loop of platinum wire to the buccal surface which will be concealed by the porcelain and anchor the same.

The next step is to bake the porcelain to the buccal surface, and then cover the occlusal surface with solder, which is easily done in the Hammond furnace.

By watching carefully you can "sweat" a piece of solder just where you want it. The overhanging edge of platinum has served to protect the porcelain from becoming chipped, and is now finished down and the crown gold-plated if desired. After the crown is ready for the porcelain I usually take an impression and then dismiss the patient, finishing at my leisure.

SEAMLESS GOLD CROWNS.

BY C. M. GLAZIER, D.M.D., BOSTON, MASS.

SOME of us have wanted to make seamless gold crowns, have bought some system, and failed because we depended upon the machine to make the crown. The machine will produce a crown, but to make a crown that will fit with perfect articulation the machine should only be used to assist.

One important point is the production of a model, and that may be accomplished by the following method.

Make some seamless bands of copper 32 gauge of various sizes. This can be done by drawing a cartridge with a draw-plate and cutting off the top by driving into a smaller hole of the draw-plate. Select a band that will fit the prepared root, festooning and placing it below the gum margin the desired distance. Take impression and bite. Placing band in impression, pour model and place on articulator. Now fill the band with plaster and close the articulator, having previously varnished the models. When the plaster has set, carve to tooth form. (Fig. 1.)

If it is a broken tooth or root you are crowning, you can swage into a counter-die; if it is a perfect tooth prepared as an abutment, swage over a die.

To swage into a counter-die remove the model of the tooth from the articulator, fill the bottom of the band with mouldine,

insert a tooth-pick, and push into fusible metal poured into a Berry swager. Split the metal to remove the model. Place a cartridge the size of a band used in the counter-die and swage with cornmeal. The line of demarkation between the mouldine and the band of the model must be made distinct, so as to know where to cut off the crown.

To swage over a die, space must be left between the model of the tooth and the occluding tooth the thickness of the gold to be used. Then cut the model of the tooth from the articulator, letting the plaster extend from the bottom of the band; then remove the band and carve as in Fig. 2. The line of demarkation must

FIG. 1.

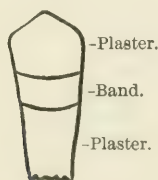
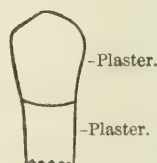


FIG. 2.



be made distinct between the crown model and extending plaster. Then pour soft plaster into two half-circles of zinc one inch high, placed together and held by an elastic band, and insert model of tooth. When the plaster is dry fracture through the centre and remove the model, place together again, and pour fusible metal into the counter-die to produce the metal die.

Place a cartridge of gold over the die and with swaging hammer draw to fit the model, placing lastly in swager with heavy plunger, using mouldine to swage with. When swaged to fit, boil out fusible metal, trim, and polish the crown.

To acquire the right direction of force the two apposing surfaces of the swager should be concave.

In the case of a perfect tooth prepared for an abutment, a plaster model of that prepared tooth may be reproduced in metal, and a crown made to fit that model. This is a case where a die method is demanded.

The face of a crown may be cut out and the adaptability of the gold will be found perfect, which is essential to an open-faced crown.

By the adoption of both methods of swaging practicable seamless gold crowns can be made having perfect contours.

Reports of Society Meetings.

THE NEW YORK INSTITUTE OF STOMATOLOGY.

A REGULAR meeting of The New York Institute of Stomatology was held on Tuesday evening, October 7, 1902, at the residence of Dr. J. B. Loucherty, 136 West Forty-eighth Street, New York City.

The President, Dr. J. Morgan Howe, occupied the chair, and called the meeting to order.

The minutes of the last regular meeting were read and approved.

The President.—Under "Communications on Theory and Practice," Dr. St. George Elliott has kindly agreed to present a report of some experiments with archite.

Dr. Elliott.—Before taking up this very interesting subject of archite, I would like to say that we have offered to us by the medical profession a new antiseptic, with which I have been experimenting to some extent. It has been largely recommended in the treatment of typhoid fever, but it appeals to us from its dental possibilities. It is thirty times as strong as bichloride of mercury, harmless, non-poisonous, and can be taken in five-grain doses internally. I have used it to a limited extent in the treatment of root-canals. It is one of the phenol products, and is called aceterone. It is made by Parke, Davis & Co. It is somewhat expensive, and is alloyed, so to speak, with an inert powder to reduce its strength fifty per cent. It is slightly soluble in water and decomposed by organic matter. I mention this because it seems to me a remarkable inconsistency in the literature of the subject. If it is rapidly decomposed by organic matter, how can it ever reach the intestinal canal intact?

In regard to archite, I commenced my experiments soon after the material was introduced, and was very much pleased with it. Its working characteristics were very pleasant. I noticed that it set very rapidly, soon became very hard, and was difficult to manipulate on account of this hardness. I have made a great many inquiries, and find there is a general dissatisfaction in regard to its

use, as it does not stand well in the mouth. Its cohesion to the walls of a cavity is not as good as the ordinary phosphate, but with proper care, preparing the cavity as for amalgam, you get a fair or sufficient amount of cohesion. While it presents certain advantages in its translucency, taking color beautifully, and matching the color of the teeth very perfectly, it does not seem to have any particular value in regard to durability, and it was in this direction we had the greatest expectations. However, I believe certain qualities have been developed in the manufacture of this material which eventually may give us an ideal filling. Only two days ago it was necessary for me to take out an archite filling in a molar which I had put in about two months ago, and I had extreme difficulty in drilling it out. If it has that particular characteristic, and the manufacturers can overcome some of its defects, it will be very valuable. I tried a number of experiments as to how long it should be kept free from moisture. I found out, as one would naturally expect, that if it were mixed thin and placed at once in water, it never attained any great degree of hardness, and was very chalky in character; but if it were protected either by cellulose (which is celluloid in liquid form) or by paraffin, it did gain the maximum degree of hardness. Its penetration by coloring-matter—red ink particularly—was in accordance with this fact. If it were mixed thin and placed in ink, the ink penetrated rapidly—not as rapidly as some of the phosphates, but to an appreciable extent; but if it were allowed to harden for ten minutes, there was practically no penetration.

There is a feature in the mixing of archite which may be noticed also in phosphate: if you mix it slowly—it may be because there is a smaller amount of powder used—it will set slowly, sufficiently so for you to properly contour your filling; but if you mix it quickly, it is difficult to use, because of its hardness, setting so quickly.

There was so much dissatisfaction about it that I understood Smith & Son, of Pittsburg, who brought it out, had recalled it; but I have had circulars from them since saying that they had not recalled it, that some were satisfied with it, but it had not met with the approval they anticipated. They have since issued it in an improved form, and expect better results.

Subject passed.

The paper of the evening was then read by Dr. Edward H.

Angle, of St. Louis, entitled "Some Basic Principles in Orthodontia," the same being accompanied with illustrations on the screen.

(For Dr. Angle's paper, see page 729.)

DISCUSSION.

Dr. S. H. Guilford, of Philadelphia, said that Dr. Angle had made such a fine exposition of the subject that it would be difficult to add anything to it. He wished to emphasize some of the points made by Dr. Angle and to refer to others upon which they differed somewhat. He expressed his pleasure at the growth of this branch of dentistry since he began practice, and his great interest in it. There are certain "basic principles" which should be emphasized,—that it is impossible for a practitioner to fill a tooth, make a plate, or correct a case of irregularity equally well, for the proper amount of skill necessary to accomplish this cannot be developed with a few cases.

Practitioners do not consider how much knowledge of dynamics and physiology and good reasoning power is required to work out the problems presented.

He believes that orthodontia should be made a specialty, and that those practising it should confine themselves to it as far as possible in order to develop the skill necessary.

A man should have a knowledge of the physiological characteristics of the teeth and the parts surrounding them in order to understand how force should be directed at different points to the best advantage. A man making this a specialty should also have an understanding of the law of harmony, and an artistic instinct to aid his judgment as to what is necessary in each case.

If a younger practitioner wishes advice of some one older, he should first work out the problem for himself and then submit the case and ask whether his plan can be improved and whether it is right or wrong.

Dr. Guilford said that he differed somewhat from Dr. Angle regarding extraction. He finds that in certain cases it is best to extract, and believes this is where individual judgment is of value. He does not advocate extraction in general, but cannot reconcile himself to the idea of never extracting. He mentioned two cases illustrating this idea: First, a boy of about fifteen with fairly good occlusion, with two exceptions, an upper cuspid standing out

and no room for it in the arch. In the lower jaw, one of the second bicuspid was inlocked and more than half the space taken up by the crowding together of the other teeth. The boy's father was a large man and the boy favored him. Dr. Guilford stated to the patient's mother that it would be better to expand the arches so that there would be harmony when the face had attained its full growth; that extraction would have been positively harmful.

Second, a little girl apparently undersized; her mother and sister small; patient evidently to be like her mother. The occlusion was perfect, except that the lateral stood outside of the arch. After extracting the first bicuspid he moved the cuspid and lateral back, preserving the occlusion. The arches would have been too large for the face if they had been expanded. Dr. Guilford does not believe in hard and fast rules, and feels that we should be governed by circumstances, and where extraction would be right in one case it would be wrong in ten or twenty others.

Dr. C. F. Allan, of Newburgh, called attention to Dr. Angle's plea for good models, and exhibited some specimens of Dr. Angle's work in that direction.

Dr. G. S. Allan said that he had always looked askance at the idea of orthodontia being a specialty until he visited Dr. Angle's office, saw his apparatus, and watched the cases brought in to have their appliances attended to. He then became convinced that Dr. Angle was right that orthodontia should be practised as a specialty.

Dr. Allan thought that another point should be emphasized,—the fact that there is no appliance to be made; the apparatus is at hand for every case that presents, and has only to be adapted.

After thanking the essayist, Dr. Allan expressed pleasure that it had been possible for him to bring Dr. Angle before the Institute and give him the opportunity to present the subject in such a beautiful and masterful manner.

Dr. V. E. Barnes, of Cleveland, said that after constant use of the jack-screw and complicated fixtures the wonderful results attained with simple appliances was inspiring. Being dissatisfied with jack-screws, and feeling that there was a waste of time and energy, he had taken to the arch wire, and found his cases progressing two or three times as fast as before and with less annoyance to the patient. Dr. Barnes thinks that there is much promise in the Baker anchorage. He also stated that he hoped we had reached the dawn of a new era where extraction was to be the ex-

ception and not the rule. He believes that degeneracy and inheritance has been given too much credit as causes of irregularity.

Dr. Shaw, of Springfield, Mass., expressed his commendation of the views set forth by Dr. Angle.

Dr. J. Bond Littig said that the paper had been a revelation to him, especially regarding the facility with which the teeth were moved. He felt that the paper had been of vast benefit to those interested in the subject.

Dr. E. A. Bogue expressed his earnest thanks to Dr. Angle, and said that the importance of the occlusion of the first permanent molars had never been so clearly stated before in the Institute; indeed, he did not know where it had been brought out in print so clearly and concisely.

The first statement made of it that he knew of was in a paper of his own which he brought out in April before the American Medical Association.

The first permanent molar was erupted at the time when all the deciduous teeth were in the mouth. They were the posts on which the jaws were designed to rest during the shedding of the temporary and eruption of the rest of the permanent teeth.

He believes that the dentist's first duty is to see that these teeth occupy the proper relative positions towards each other. Then there would be very few cases that could not easily be regulated in all other particulars.

Dr. Leroy stated that although he had read much dental literature on the subject of orthodontia, Dr. Angle's remarks brought out the principles more clearly than anything he had seen on the subject. He thought that the cause of failure in much of the regulating was due to the fact that the men undertaking it did not understand the principles; that those undertaking regulating should bear this principle in mind; the two main points to be considered were the alignment of the first permanent molars and cuspid teeth.

Speaking of Dr. Angle's remarks about jumping the bite for young individuals under twelve years, Dr. Leroy mentioned two cases in which he had jumped the bite for patients of twenty.

Adjourned.

FRED. L. BOGUE, M.D., D.D.S.,
Editor The New York Institute of Stomatology.

Editorial.

IS THE ERUPTION OF TEETH CAUSED BY BLOOD-PRESSURE?

IN this journal for June was published an interesting paper, read by Thomas E. Constant, M.R.C.S., of England, before the Section on Stomatology, American Medical Association, at New Orleans, entitled "The Dental Pulp viewed without the Microscope." He presented in this paper a very ingenious and novel theory that we are "justified in assuming that the blood-pressure exerted in the vascular tissue, which lies between a developing tooth and its bony surroundings, is the active mechanical factor in the process known as the eruption of teeth." In the September number will be found the discussion upon the paper, equally interesting, as it gives the views of some of the best scientific minds in the dental profession.

The subject is worthy of further elaboration, not with the expectation of shedding light upon an abstruse physiological fact, but, possibly, to enlarge the sphere of criticism of the explanation so lucidly given. The subject has not, through the paper or discussion which followed, passed beyond the limitation of theory, for until we are in possession of more facts of observation it cannot be considered, by any means, as settled.

There is no one subject connected with the development of teeth that has puzzled the thinking mind more than this. Teeth make their way to the surface in an undeveloped state, and equally are extruded from their sockets through the loss of antagonists. The two processes, while seemingly the same, are evidently the result of diverse action, and cannot be confounded with each other. Constant contends that the latter condition is equally the result of blood-pressure, for he says, "The vascularity of this membrane (peridental) still endows it, however, with an extrusive tendency, which is in itself sufficient to account for the gradual elongation of unopposed teeth, and is probably the chief means by which the proper occlusion of opposing teeth is maintained."

The difficulty of accepting this conclusion lies in the fact that

the elongated tooth cannot be regarded as being in a pathological condition, for it is practically undisturbed in its socket, and, being thus normally quiescent, there can be nothing to produce a hyperæmic state in the peridental membrane. With its normality unchanged, there could not possibly be an increased blood-pressure to force it out of its original position. The apt illustration, given long ago by Dr. Pierce, seems to be more nearly the true explanation,—that the tooth is forced out similarly to the bung in the barrel by a sudden blow on the staves adjoining. The tooth, no longer having the force of the occluding tooth, is left to the action of the surrounding alveolus, which, increasingly developing through loss of external pressure, produces a constant force upon the root and mechanically, through additions at the extremity and laterally, sends the tooth forward. This explanation is based on the fact that the formation of bone follows the gradual elongation.

The same reasoning will not, however, apply to the eruption of teeth during development. Another force comes in here,—the force of growth. Constant objects to this idea, for he says, "Since the forming root is never in actual contact with its bony surroundings, it must necessarily be against the vascular material in which it is embedded. Now, this tissue appears post mortem of far too jelly-like a consistence to oppose any effective resistance by virtue of its own structure, and yet such resistance there must be, or the tissue would be obliterated. Whence, then, are its resisting properties derived? Necessarily from the blood-pressure." This does not appear to the writer as conclusive. It is true that as growth proceeds vascularity is increased, and in that sense his view may be regarded as correct, but because of that increased vascularity it does not necessarily follow that the pulp is of "too jelly-like a consistence" to produce a force sufficient to cause the tooth to advance towards the surface.

The force of growth is apparently underrated by this writer and by some of those who enthusiastically adopted his view. The tissue of the developing pulp is ample, notwithstanding its jelly-like character, to produce a resistance that will send the tooth forward without recourse to the growth of the hard tissues which surround it. There are too many illustrations of this to require more than the mere statement, but the writer would call to mind the growth of a vascular tumor, not uncommon in the mouth, and where wide separation is made by its forcing the teeth widely

apart. This is within the experience of almost every practitioner, and presents a greater force than would possibly be required to move a single tooth towards the gum. The vascularity of this tumor may be used as an argument in favor of blood-pressure, but if so, the greater including the less, the normal amount of blood in the developing tooth is quite equal to the lessened force demanded.

The development of plant-life presents similar equally interesting phenomena. The plant germ bursts its investure and gradually advances towards the surface of the earth. Is this progress due to sap pressure? It will hardly be contended that this is the force that moves the plant through its natural environment, and yet, if the blood-pressure be the explanation of the eruption of the tooth in the animal, are we not forced to a similar conclusion when considering the eruption of the vegetable?

It is scarcely necessary to call attention to the force manifested in vegetable growth. All are familiar with rock rent in twain by vegetable fibres originally of the most delicate character. In fact, this growth illustrates very fully, it seems to the writer, the possibility of a force that sufficiently corroborates the idea that the pulp is capable of exerting a power quite equal to the demands made for tooth eruption. If an illustration be needed to enforce this view, attention is called to the physiological process of dentition. It is claimed by some that this is not a pathological process, and while this is true, the results are frequently pathological. When reflexes occur from this cause, what must be the conclusion? Simply, that growth has proceeded faster than absorption of the surrounding tissues and that, therefore, there is pressure of the developing pulp upon the superimposed hard bony envelope, and producing, through that pressure, severe systemic disturbance. If the pulp was of a too jelly-like substance to produce resistance in growth this could not possibly result, and we would have a continuance of normal conditions notwithstanding the pressure exerted. It may possibly be true that the pressure produces an increased blood-supply; in fact, it must result in hyperæmia, and, so far, the essayist's position has a certain modified support, but the condition is abnormal, indeed pathological, and bears no relation to the physiological process of eruption in dentition. This must go on to completion without a blood-supply other than normal.

While the question is one of great interest, neither the valuable paper of our English colleague nor the discussion has cleared this

complex subject of its difficulties, nor is it pretended that this article will add materially to general enlightenment. From whatever side the subject is viewed, problems, not as yet solved, present themselves, and it is more than probable that these will continue to remain in the domain of theory. We must, however, gladly welcome every new thought in this direction, and Dr. Constant's explanation must be regarded as one of the most valuable contributions to a very difficult subject.

WILLIAM CARY BARRETT.

UPON another page will be found a sketch of the life of Dr. Barrett, whose death in Germany on August 22, while not unexpected, brought with it a feeling of deep personal, as well as professional, loss.

The place which Dr. Barrett will hold in the dental profession must be left for time to determine. It may not be possible for his contemporaries to deal justly with such a character. He was the embodiment of energy, and this activity, mental and physical, naturally led him into antagonistic relations with many, while, at the same time, it drew a very large number of active and influential men into his life circle.

The position which he occupied was a unique one in his profession. Well grounded in its foundation principles, he seemed a law unto himself, leading him to differ with his colleagues upon many points of practice, and yet withal maintaining a position in general accord with recognized procedures. This trait in his character is very markedly illustrated in his work on "Oral Pathology and Practice."

That he was often misjudged by those brought into intimate relations with him was due largely to his peculiar temperament that could not take kindly to opposition, and this frequently created antagonisms that in his cooler and better moments he regretted. It is not surprising, therefore, that his motives were frequently misinterpreted. Underlying his apparently aggressive nature was, unquestionably, a sincere devotion to the best interests of his profession. He labored, through his own methods, that dentistry thereby might be aided to advance to a higher standard during his

life, and that his efforts were not lost in his generation is manifest in the general uplifting of this calling during the years he was devoted to its interests. While he had many coworkers during the last half of the nineteenth century who were equally zealous in advancing professional standards, very few, perhaps none, threw themselves so unreservedly and with a more self-sacrificing spirit, as he did, into the whirl of professional activities. As an editor he was always forcible and frequently aggressive, and he left no room for doubt upon the minds of his readers as to his meaning.

His labors in the educational field were more productive of results than perhaps in any other direction to which his energies were extended. His force of character made a way where a less active and courageous mind would have faltered. He was always prepared for any advance that would make his profession more worthy of respect, hence in the National Association of Dental Faculties he never feared results where more timid men hesitated. This was peculiarly apparent when, as chairman of the Foreign Relations Committee, he attacked, almost single-handed, the dealers in diplomas in Chicago, and exposed, as never before, this nefarious traffic. It was a courageous effort, and, while eventually aided by others, the real credit for success attained in crushing out this fraudulent work must be given to him. It is questionable whether any other man in dentistry, or out of it, would have sacrificed so much with no hope of ultimate reward beyond the consciousness of work well done.

In whatever light Dr. Barrett be viewed, the conclusion must be that he was one of the remarkable men of his century, and, had he adopted a broader field for his life-work, would have made a world-wide reputation. For this self-sacrifice he should be remembered with gratitude, for he preferred to aid a struggling profession rather than seek honors where honors are more readily earned.

The permanent place that Dr. Barrett should fill in contemporary or future thought cannot be considered here. Complex characters, such as he possessed, cannot be judged properly in their lifetime. His errors in judging others and misconstruing motives of action may be allowed to lapse into forgetfulness, but his energy, his work bravely performed as he understood it, will live and serve as an encouragement to the faint-hearted to move forward in the pathway that leads directly to the highest, allowing no discouragements to block the way to that standard that means a truly professional life.

Bibliography.

SYPHILIS IN DENTISTRY. By L. Blake Baldwin M.D., Chicago, Ill., Professor of Dermatology and Venereal Diseases, Post-Graduate Medical School, etc., and Ezra Read Larned, M.D., Chicago, Ill. E. H. Colgrove, Chicago, 1903.

The authors of this book of one hundred and twenty pages, illustrated, dedicate it "To our brothers in arms, the members of the dental profession," and that profession would do well to procure this book and consider seriously its contents. Whether dentists need its lessons more than other members of the healing art is questionable, but that constant familiarity with danger breeds contempt is perhaps more noticeable with members of this calling than with others. It is certainly not true that the present graduate is ignorant of the danger to his patient and himself of infection from this disease, for all are made familiar with it.

It is well, therefore, to keep the danger of infection constantly in view, and the best method of doing this is through text-books of convenient size, and the one under consideration is an excellent example of good text-book making,—clear, concise, and giving all the principal facts connected with the disease in question.

While syphilis, in its many forms, is made more or less familiar to every dental student in clinical cases, it is still a recognized fact that diagnosis is frequently difficult, hence they may inadvertently be led into danger both to themselves and to their patients. The authors of this book give special attention to this possibility, and clearly explain the various forms in which the disease presents.

While the authors keep within the limits of their own specialty, they are upon stable ground, but when they pass over into dentistry, as they do in discussing "interstitial gingivitis," otherwise pyorrhœa alveolaris, they seriously mar the value of their production. The general trend of Part X. is to show "a greater or less interdependence between syphilis and pyorrhœa alveolaris," and yet, in the opinion of the reviewer, no greater mistake could be made than to draw general conclusions from a few isolated cases. That syphilis may produce pericemental inflammations is beyond dispute, but so may other pathological conditions, but pyor-

rhœa alveolaris, in its general manifestations, is a local irritation. The following quotation condemns the chapter: "Interstitial gingivitis, or pyorrhœa alveolaris, . . . remains to this day a *bête noire* to dentists. This is mainly due to the fact that they cannot cure it, and the best methods at their command to-day lie in prosthetic dentistry." One naturally, after such a sweeping assertion, asks, With whom have the authors mingled in the dental profession? Pyorrhœa alveolaris is very readily cured when occurring between the ages of twenty to fifty, not so readily at later periods.

Aside from this weak chapter, the book can be cordially recommended as a text-book upon this special subject and one worthy of earnest study by practitioners of every grade.

THE FILLING OF TEETH WITH PORCELAIN (Jenkins's System).
A Text-Book for Dentists and Students, with one hundred and sixteen Illustrations. By Walter Wolfgang Bruck, D.D.S., Instructor in the Dental Institute of the Royal University of Breslau. Translated from the German by Charles W. Jenkins, D.D.S., Zurich. Consolidated Dental Manufacturing Company, New York.

Dr. Jenkins's method of preparing inlays has been so fully explained by himself and others that it would seem that all in the dental profession must be familiar with the technique of the operation.

The dispute that has been vigorously maintained between the high-fusing and low-fusing advocates seems to be gradually settling down into the conviction that both have a place, and he is the wisest who takes a somewhat eclectic position and selects that best adapted to the case in hand.

The articles published heretofore have been more or less of a fugitive character, or not entering into sufficient detail to be of positive value to the uninstructed. This book, therefore, fills a want as far as the Jenkins system is concerned. The excellent illustrations explain the text very satisfactorily, and it would seem not a difficult matter for any one to follow the methods without having had the benefit of previous personal instruction.

Much credit is due the translator for his portion of the work; it is exceedingly well done.

Domestic Correspondence.

RESOLUTION ON INTERCHANGE OF LICENSE.

TO THE EDITOR:

SIR,—The following is a resolution passed by the Board of Examiners of New Jersey and also passed unanimously by the National Board at their meeting at Asheville. Two States have already entered into an agreement on this plan,—viz., Ohio and Indiana.

C. S. STOCKTON.

NEWARK, N. J., August 5, 1903.

“Resolved, That an interchange of license to practise dentistry be and is hereby recommended to be granted by the various State boards on the following specific conditions:

“Any dentist who has been in legal practice for five years or more and is a reputable dentist of good moral character, and who is desirous of making a change of residence into another State, may apply to the examining board of the State in which he resides for a new certificate, which shall attest to his moral character and professional attainments, and said certificate, if granted, shall be deposited with the examining board of the State in which he proposes to reside, and the said board, in exchange therefor, may grant him a license allowing him to practise dentistry.”

Foreign Correspondence.

DR. M. H. CRYER'S VISIT TO DUBLIN, IRELAND.

TO THE EDITOR:

SIR,—Dr. M. H. Cryer, Professor of Oral Surgery in the University of Pennsylvania, gave a most interesting lecture and demonstration of dental anatomy on Wednesday evening, July 15, 1903, in the Albert Hall of the Royal College of Surgeons in Ireland. A large and intelligent audience listened to Dr. M. H. Cryer and examined the numerous specimens and preparations that were

placed on the table for the information of the physicians, surgeons, and dentists who had been invited to attend.

The meeting was arranged by the Irish Branch of the British Dental Association, by whom Dr. Cryer had been invited to visit and deliver his most interesting and original lecture. The president and the vice-president of the College were in attendance, as well as members of the Council and the chief specialists in eye, nose, throat, and ear diseases, which are so closely related to the area involved in the practice of dental surgery.

The following evening Dr. Cryer was invited by the Irish dentists to a complimentary dinner at the Bray Head Hotel, county Wicklow. The company consisted of the guests and members of the Association. Mr. Joseph Thompson was in the chair, in the unavoidable absence of the branch president, and he proposed the health and prosperity of Dr. M. H. Cryer in felicitous terms. Dr. Cryer's reply was full of interest and information on matters that have vexed the dental world on both sides of the Atlantic for years past. Dr. Cryer's lucid and seasonable speech was closely punctuated with applause and cheers as it overflowed with a cordial good will towards the ideals as well as the practical efforts of the members of the British dental profession to advance their skill and usefulness. Dr. Cryer's peroration expressed his gratification of the warmth and cordiality of his reception so racy of the soil.

Before leaving Dublin the members of the Association presented Mrs. Cryer with a gold brooch of interlined Celtic design carefully copied from one of the panels of the famous Cross of Cony. Dr. Cryer was presented with a handsome example of a "Tipperary rifle,"—*i.e.*, a choice blackthorn mounted in gold with a suitable inscription engraved in Celtic lettering, which was reinforced with two *svaticus*.

Dr. Cryer's visit has been an occasion of much gratification to the members of the dental profession throughout Ireland.

[EXPLANATORY REMARKS. — The foregoing interesting communication from W. Booth Pearsall, Dublin, was sent to an influential journal for publication; but that not having a department for personal matters, it was transferred to the INTERNATIONAL, with the request that it be published. This journal very willingly complies with the request of our contemporary, as the account of Dr. Cryer's visit to Ireland will, without doubt, be read with pleasure by his many friends in this country.—ED.]

Obituary.

WILLIAM C. BARRETT, M.D., D.D.S., M.D.S.

DR. BARRETT died at Nauheim, Germany, August 22, 1903, with heart complications. His death was not a surprise to his friends, although the hope was felt that he would live to return to this country. While his death occurred August 22, it was not known in Buffalo until September 2. This is not surprising to those familiar with the difficulties attending death in a foreign land and especially in Germany, when removal to the native land is deemed necessary. It is attended with innumerable and harrassing official supervision.

"Dr. Barrett was a son of Rev. William and Hannah Cheney (Tanner) Barrett, and was born on May 13, 1834, in Monroe County, N. Y. He was therefore in his seventieth year.

"After a thorough academic education at Kingsville Academy, Ohio, Carey Seminary, New York, and Yates Academy, New York, for some years he was a teacher in different literary institutions in the State of New York. In 1863 he began the study of medicine, but in 1864 he changed to that of dentistry, receiving the degree of Master of Dental Surgery in 1869. He began dental practice in the village of Warsaw, Wyoming County, N. Y., and remained there until the spring of 1876, when he moved to Buffalo, and in 1887 again took up the study of medicine in the Medical Department of the University of Buffalo, graduating with the degree of M.D. in 1880. He also attended lectures in the Pennsylvania College of Dental Surgery, in Philadelphia, and graduated with the degree of Doctor of Dental Surgery in 1881.

"After that time he was in the practice of his profession in the city of Buffalo. In 1885 he received the appointment of lecturer of Oral Pathology in the Medical Department of the University of Buffalo, his alma mater, and in 1890 was elected to the full professorship. In 1889 he was elected professor of Anatomy and Pathology in the Chicago College of Dental Surgery, and accepted after due consideration, but still continuing to maintain his residence in Buffalo. After that appointment he visited Chicago

regularly for the purpose of delivering his lectures and giving the instruction belonging to his chair.

"Upon the organization of the Dental Department of the University of Buffalo, in 1891, Dr. Barrett was appointed professor of the Principles and Practice of Dentistry and Dental Pathology, and was elected dean of the faculty, which position he held at the time of his death. He was also one of the staff of the Buffalo General Hospital, holding the position of oral surgeon in that institution.

"From 1882 to 1888 he was editor of the *Independent Practitioner*, devoted to dental medicine and surgery. In 1888 it was sold and the editor retired from journalism, but in 1891 he again entered the field as editor of the *Dental Practitioner*, of Buffalo.

"Dr. Barrett was a member of the Medical Society of the County of Erie, of the Buffalo Medical and Surgical Association, and of the American Medical Association. He was a member of the International Medical Congress which met in London in 1881; an honorary vice-president of the International Medical Congress, Washington, 1887; and of the congress of 1890, which met in Berlin. He was a member of the International Dental Federation, that met at Stockholm, Sweden, August, 1902. He was president of the Dental Society of the State of New York in 1875 and 1876, and of the American Dental Association in 1886. He was a member of the American Microscopical Society and honorary member of many State and foreign professional associations. Dr. Barrett was a member of the Masonic Fraternity, belonging to Queen City Lodge, F. and A. M., and was a Knight Templar. He was also a musician, and was at one time in charge of Asbury church choir."

Dr. Barrett's tremendous energy naturally led him into many fields of human endeavor, as the foregoing abundantly illustrates. His ability as an editor was markedly illustrated in the two journals under his management. The editorial pages bristled with his ideas of what dentistry should do or leave undone, and, in the main, his effort was to advance his profession to a higher standard.

He was not a prolific writer upon medical or dental topics, yet some of his papers have a special value. He took a deep interest in comparative anatomy, and did very much to create an interest in this important branch.

In 1898 he gave to dentistry his "Oral Pathology and Practice." This was intended as a text-book for dental colleges, and, while very defective in the writer's estimation, met with a demand

which required a second edition shortly thereafter. Dr. Barrett at the time of his death was engaged upon a History of Dentistry in New York. It is not known whether he had been able to complete this.

The last years of Dr. Barrett's life were spent in strenuous activities sufficient to break down any ordinary health. The chairmanship of the Foreign Relations Committee of the National Association of Dental Faculties required the possession of mental power not generally possessed. The position meant constant antagonisms both from within and from without,—within the circle of his colleagues and without in the diploma traffic which he unearthed in Illinois. Combined with this was the great labor in organizing the foreign work connected with this department. To fill such a position and avoid criticism was an impossibility, but this criticism was always resented by the chairman as an infringement upon the privileges of his committee. While this was a weakness, it may readily be forgotten and forgiven in view of the really great work Dr. Barrett did in this direction. He had a power of organization that few possess, and the results of his labor in this special direction will long remain an honor to him, and this, indirectly, will be reflected upon the association he so faithfully served.

Any review of such an active mentality must necessarily be imperfect. His restless spirit was ever alert for new fields to conquer, yet he never lost sight of the fact that his profession demanded that he give undivided devotion to its interests, and his compliance with this demand left but little time for things that smaller men delight in. To this untiring devotion may be ascribed the final breakdown of this strong and virile physical organism.

Dr. Barrett was the life and soul of the Dental Department of Buffalo University. His reputation, national and international, had much to do with bringing this school into prominence, and we are very apt to think, where this is the case, that the loss is a very serious setback, but it is well to remember that colleges are long-lived, and while they suffer in the loss of their great teachers, others will arise and the school will be the stronger. This, no doubt, will be the case with this department.

Dr. Barrett was married in 1857 to Amelia Harris Ryerse, of Port Ryerse, Ontario, who survives him. They had no children. Mrs. Barrett was with her husband in Germany at the time of his death.

Miscellany.

FORMALDEHYDE FOR PULP-CANAL CLEANSING.—MM. André and Marion recommend the following formula :

Formic aldehyde, 40 parts;
Essence of geranium, 20 parts;
Alcohol, eighty per cent., 40 parts.

They claim that the alcohol, by uniting with and dissolving the fatty matter always present in a foul pulp-canal, assists very materially the coagulation of the albuminous contents by the formaldehyde. They also claim that until the pulp-canal is thoroughly clean formaldehyde is not a sterilizer; therefore its application should be continued after the cleanliness of the canal has been proved by the usual tests. The above formula has resulted from a long series of carefully conducted experiments, undertaken with the purpose of utilizing the valuable properties of this agent in treating putrescent conditions of the pulp-canal and its surroundings safely, efficiently, and with the least discomfort to the patient.—*British Journal of Dental Science*, June 1, 1900, page 481.

CHLOROFORM LINIMENT FOR DENTAL USE.—

Chloroform, \mathfrak{z} ii;
Ether, \mathfrak{z} ii;
Alcohol, \mathfrak{z} i;
Gum-camphor, \mathfrak{z} i.

This is a valuable preparation, and should be kept handy in every dental office. A lock of cotton, liberal in size, saturated with it and placed on the gum over a painful tooth, usually gives prompt relief. It is especially useful in painful conditions following an arsenical application, pulp-canal filling, the insertion of a crown or bridge, and the after-pain of tooth-extraction. It usually mitigates very much the pain attending an alveolar abscess, and is a comfort to the patient if used before beginning the preparation

of a root for crowning. Its efficiency is increased by adding a small portion of chloretone immediately before making the application. With the addition of a very little formaldehyde and chloretone or cocain, it may be used to anaesthetize a pulp preparatory to its extirpation. When applied to the gums the first effect is usually a sharp and rather severe smarting, which passes off in a minute or two.—W. H. T.

CARE OF THE HANDS.—It is not often that attention is called in societies to the necessity of more care by the dentist, in regard to the hands and instruments. A case of infection that I recently had to trace up has proved to my mind that we all ought to be more careful than we are. The case was that of a young, healthy woman about twenty-five years of age, who was in the country, not exposed to infection of any kind. She went to a dentist and had some teeth filled. This dentist was a consumptive in pretty bad shape, and a few days after he finished his work her mouth became very sore and her teeth loose, and three weeks afterwards she had a hard cough, and rapidly developed all symptoms of consumption. Examination of the sputum and the lungs showed tuberculosis bacilla in the saliva, and a consolidation in the lung. It is generally difficult to trace the case to the man who is responsible for it; but to my mind there are many cases where infection is given by the dentist through his hands or instruments. I think the dentist's hands are often responsible. They do not clean them properly. I dare say among the members of this society you will not find a bichloride solution in one office out of fifty; and yet dentists handle consumptive cases, and go from one to the other, just washing their hands with soap and water. It is not fair to the patient, and I think it ought to be brought more fully before the dentists. If you use alcohol and glycerin between the washings, you can have your hands soft and nice at the end of the day.—DR. RUSSELL, Brooklyn, *Items of Interest*.

BEESWAX FOR FILLING ROOTS.—Dr. B. F. Arrington has used best quality of beeswax for filling roots, with very satisfactory results, for many years. He coaxed it into roots with hot instruments.—*Dental Digest*.

SHARPENING LANCETS, EXCAVATORS, ETC.—Disks made from emery paper Nos. 00 and $\frac{1}{2}$, an inch and a half in diameter, are placed in alternate layers, to about a quarter of an inch in thickness, upon a disk made of tin slightly smaller in diameter than the emery disks and mounted on a screw mandrel.

The tin disk serves to hold the paper disks flat while sharpening the instrument. Place the mandrel in a hand-piece and hold it with the left hand, leaving the right free to apply the instrument to be sharpened in contact with the coarser grit, to trim instrument to desired shape.

Tear off this disk and finish the sharpening upon the finer grit. A keen, even edge can be given to the instrument in a very short time in this way.—DR. F. J. PATTERSON, *Dental Review*.

THE SANGER HALF-COLLAR CROWN.—Dr. R. M. Sanger, of East Orange, N. J., describes in the August, 1903, number of the *Dental Cosmos* a half-collar crown he has invented. He begins its construction by cutting a piece of pure gold plate No. 30 into a shape closely resembling a pointed finger-nail, or a rounded angle triangle with a base about half an inch long, the two sides a little longer. He grasps this by the base with a pair of clasp-benders, including a little more than the width of the intended collar, then bends the pointed portion over the convex beak of the clasp-benders and hammers it down with a small bench hammer. This shapes the gold, rudely, to the form of the intended cap, the excess of gold forming two tabs, one on each side; these are now cut off, leaving the front portion which is to form the top of the cap free to be burnished into close contact with the root. The cap is now adjusted to the root, reduced to a proper size, and bent and burnished to an accurate fit. This constitutes all that is claimed as new. The doctor contends that the cap is thus made much more readily and quickly, and, moreover, as the collar and cap are united, the little soldering that is needed to complete it will not disturb its adjustment to the root. The balance of the work, the adjustment of the dowel, etc., is the same as in the construction of any backed and soldered crown.

If it is desired to complete the crown with porcelain, soft platinum is used in place of the gold, and the tabs are turned over and

hammered down to strengthen the top of the cap instead of being cut off, a little pure gold being fused over them to make them more secure.

The weak point of this device is the necessity of using pure gold or soft platinum, no other available metal being sufficiently pliable. Those who have had much experience with such work have universally found that half-collar crowns made of these soft and pliable metals are not satisfactory. Under stress the collar bends. A much more rigid metal is required to give security to the fixture and conserve the strength of the root.

Dr. Sanger says, "I have applied for a patent on the half-collar crown in order that no one else may do so and attempt to mulct the profession for the privilege of using it. I am glad to give it to you for what it is worth, and only ask in return that it shall bear my name."—W. H. T.

CLEANSING THE HANDS.—Dr. Chas. H. Gerrish, of Exeter, N. H., recommends old high-grade toilet soap, the older the better, and plain Indian cornmeal, for cleansing the hands before going from the laboratory to the office.—*Dental Cosmos*, May, 1903, page 401.

Current News.

FOURTH INTERNATIONAL DENTAL CONGRESS.

August 29 to September 3, 1904.

UNIVERSAL EXPOSITION, ST. LOUIS, 1904.

Committee of Organization of Fourth Dental Congress.—H. J. Burkhart, Chairman; E. C. Kirk, Secretary; R. H. Hofheinz, William Carr, W. E. Boardman, V. E. Turner, J. Y. Crawford, M. F. Finley, J. W. David, William Crenshaw, Don M. Gallie, G. V. I. Brown, A. H. Peck, J. D. Patterson, B. L. Thorpe.

The Department of Congresses of the Universal Exposition, St. Louis, 1904, has nominated the Committee of Organization of the Fourth International Dental Congress—to be held in August, 1904, in connection with the Exposition—which was appointed by the National Dental Association, and has instructed the committee thus appointed to proceed with the work of organization of said Congress.

Pursuant to the instructions of the Director of Congresses of the Universal Exposition, 1904, the Committee of Organization presents for your consideration and information the subjoined outline of the plan of organization of the Dental Congress.

The Congress will be divided into two departments: Department A—SCIENCE (divided into four sections). Department B—APPLIED SCIENCE (divided into six sections).

DEPARTMENT A—SCIENCE.

I. Anatomy, Physiology, Histology, and Microscopy. Chairman, M. H. Cryer.

II. Etiology, Pathology, and Bacteriology. Chairman, R. H. Hofheinz.

III. Chemistry and Metallurgy. Chairman, J. D. Hogden.

IV. Hygiene, Prophylaxis, Therapeutics, Materia Medica, and Electro-Therapeutics. Chairman, A. H. Peck.

DEPARTMENT B—APPLIED SCIENCE.

V. Oral Surgery. Chairman, G. V. I. Brown.

VI. Orthodontia. Chairman, E. H. Angle.

VII. Operative Dentistry. Chairman, C. N. Johnson.

VIII. Prosthesis. Chairman, C. R. Turner.

IX. Education, Nomenclature, Literature, and History. Chairman, T. W. Brophy.

X. Legislation. Chairman, William Carr.

COMMITTEES.

The following committees were appointed:

Finance.—Chairman, C. S. Butler.

Programme.—Chairman, A. H. Peck.

Exhibits.—Chairman, D. M. Gallie.

Transportation.—(To be appointed.)

Reception.—Chairman, B. Holly Smith.

Registration.—Chairman, B. L. Thorpe.

Printing and Publication.—Chairman, W. E. Boardman.

Conference with State and Local Dental Societies.—Chairman, J. A. Libbey.

Dental Legislation.—Chairman, William Carr.

Auditing.—(Committee of Organization.)

Invitation.—Chairman, L. G. Noel.

Membership.—Chairman, J. D. Patterson.

Educational Methods.—Chairman, T. W. Brophy.

Oral Surgery.—Chairman, G. V. I. Brown.

Prosthetic Dentistry.—Chairman, C. R. Turner.

Local Committee of Arrangements.—(To be appointed.)

Essays.—Chairman, Wilbur F. Litch.

History of Dentistry.—Chairman, William H. Trueman.

Nomenclature.—Chairman, S. W. Foster.

Promotion of Appointment of Dental Surgeons in the Armies and Navies of the World.—Chairman, Williams Donnally.

Care of the Teeth of the Poor.—Chairman, Thomas Fillebrown.

Etiology, Pathology, and Bacteriology.—Chairman, R. H. Hofheinz.

Prize Essays.—Chairman, James Truman.

Oral Hygiene, Prophylaxis, Materia Medica, Therapeutics, and Electro-Therapeutics.—Chairman, A. H. Peck.

Operative Dentistry.—Chairman, C. N. Johnson.

Resolutions.—Chairman, J. Y. Crawford.

Clinics.—Chairman, C. E. Bentley.

Nominations.—(To be appointed.)

Local Reception Committee.—(To be appointed.)

Ad interim.—Chairman, G. V. I. Brown.

The officers of the Congress, president, vice-presidents, secretary, and treasurer, will be elected by the Congress at large at the time of the meeting, and will be nominated for the several positions by the nominating committee.

The Fourth International Dental Congress, which will be held August 29 to September 3, inclusive, 1904, will be representative of the existing status of dentistry throughout the world. It is intended further that the Congress shall set forth the history and material progress of dentistry from its crude beginnings through its several developmental stages, up to its present condition as a scientific profession.

The International Dental Congress is but one of the large number of congresses to be held during the period of the Louisiana Purchase Exposition, and these in their entirety are intended to exhibit the intellectual progress of the world, as the Exposition will set forth the material progress which has taken place since the Columbian Exposition in 1893.

It is important that each member of the dental profession in America regard this effort to hold an International Dental Congress as a matter in which he has an individual interest, and one which he is under obligation to personally help towards a successful issue. The dental profession of America has not only its own professional record to maintain with a just pride, but, as it is called upon to act the part of host in a gathering of our colleagues from all parts of the world, it has to sustain the reputation of American hospitality as well.

The Committee of Organization appeals earnestly to each member of the profession to do his part in making the Congress a success. Later bulletins will be issued setting forth the personnel of the organization and other particulars, when the details have been more fully arranged.

H. J. BURKHART, *Chairman.*

E. C. KIRK, *Secretary.*

Approved:

HOWARD J. ROGERS,
Director of Congresses.

DAVID R. FRANCIS,
President of the Exposition.

DENTAL COMMISSIONERS OF CONNECTICUT.

THE Dental Commissioners of the State of Connecticut hereby give notice that they will meet at Hartford, on Wednesday, Thursday, and Friday, November 18, 19, and 20, 1903, respectively, to examine applicants for license to practise dentistry, and for the transaction of any other proper business.

The practical examination in operative and prosthetic den-

tistry will be held Wednesday, November 18, at 9 A.M., in Putnam Phalanx Armory, corner Haynes and Pearl Streets.

The written theoretic examination will be held Thursday and Friday, November 19 and 20, at the Capitol.

All applicants should apply to the Recorder for proper blanks, and for the revised rules for conducting the examinations.

Application blanks must be carefully filled in and sworn to, and with fee, twenty-five dollars (\$25.00), filed with the Recorder on or before November 10, 1903.

By direction of the Dental Commissioners.

J. TENNEY BARKER,
Recorder.

INSTITUTE OF DENTAL PEDAGOGICS.

THE next annual meeting of the Institute of Dental Pedagogics will be held at Buffalo, N. Y., December 28, 29, and 30, 1903. A complete programme is being arranged which will be exceedingly interesting. It will be published in full in the next issue of this journal.

W. H. WHITSLAR,
Chairman.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

THE following officers were elected at the annual meeting held at Asheville, July, 1903:

President, Burton Lee Thorpe, St. Louis, Mo.; First Vice-President, from the West, James J. Reid, Chicago, Ill.; Second Vice-President, from the East, J. Tenny Barker, Wallingford, Conn.; Third Vice-President, from the South, T. B. Whitney, Salem, Ala.; Secretary and Treasurer, Charles A. Meeker, 29 Fulton Street, Newark, N. J.

On account of the resignation of Burton L. Thorpe, D.D.S., president of this Association, James J. Reid, D.D.S., of 1204 Trude Building, Chicago, Ill., will, from September 14, assume the duties of the president.

It is earnestly requested that all the secretaries of the boards

of examiners throughout the States and Territories mail to the secretary all changes in their respective boards and greatly oblige,

CHARLES A. MEEKER, D.D.S.,

Secretary.

29 FULTON STREET, NEWARK, N. J.

NORTHEASTERN DENTAL ASSOCIATION.

THE ninth annual meeting of the Northeastern Dental Association will be held in the New Horticultural Hall, corner of Massachusetts and Huntington Avenues, Boston, Mass., October 21, 22, and 23, 1903.

An interesting and profitable meeting, with a full line of exhibits, is promised.

Boston is an ideal place for a large meeting. Please come and help make it so.

EDGAR O. KINSMAN,
Secretary.

CAMBRIDGE, MASS.

SEVENTH AND EIGHTH DISTRICT DENTAL SOCIETIES OF NEW YORK.

THE thirty-fifth annual union meeting of the Seventh and Eighth District Dental Societies of the State of New York will be held at the Osborn House, Rochester, N. Y., October 27, 28, and 29, 1903. A most excellent meeting, with numerous clinics, is promised. One day will be devoted exclusively to clinics, with discussions of same in the evening. Application has been made for reduced railroad rates. Exhibitors desiring space are requested to communicate with the hotel or the Business Committee.

W. W. SMITH,
Chairman Business Committee.

THE International Dental Journal.

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Original Communications.¹

THE PORCELAIN ART IN DENTISTRY.²

BY CHARLES C. PATTEN, D.D.S., BOSTON, MASS.

THE introduction of porcelain in its present form as a filling-material has been accompanied with more than ordinary interest and enthusiasm. In fact, it has been the all-absorbing subject of demonstration and discussion, both in public and private, for the past few years, and still continues to be one of the important features at all conventions. It has been considered by some who are as yet untouched by the fever as a mere fad that in the process of time would pass into oblivion. It is safe to say that the experimental stage has long since passed, and in the hands of careful, artistic operators porcelain is being made use of in such a way that nothing of which we at present have any knowledge can supplant it. That it has its points of weakness and defects its advocates do not attempt to deny. But who can name any one material with which we are familiar that is perfect in an all-

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

² Read before the Massachusetts Dental Society, Boston, Mass., June 3 and 4, 1903.

round capacity? Human nature in our profession is not unlike that found in the other professions, or, in fact, in any walk in life. It is one of the twentieth century characteristics that we like to ride on the top wave of enthusiasm, and this is especially true if it be accompanied by an equally high wave of prosperity. If pursuing a fad brings prosperity, and incidentally popularity and wider fame, who can be censured for cultivating it? But, gentlemen, porcelain art in dentistry is no fad. It is the very highest development of art in an effort to conceal the artificial in supplementing nature. The score of years just past, and, in fact, the last decade, have brought about marvellous developments in dentistry as well as the allied profession of medicine. It is fitting that one of the crowning achievements should be the introduction and practical application of a material for stopping cavities of decay in the natural teeth that more closely approximates nature than anything previously used for that purpose.

Predictions are frequently made in regard to the changes that time will show in the human race. Among others is the disappearance of the third molar, or wisdom-tooth, as it is generally known. Extensive examination of large numbers of Egyptian skulls show that the third molar is as large and well developed now as in the ancient races. It would be folly to prophesy that the time will ever come when the human teeth will not need scientific treatment to repair the ravages of decay. In view of this fact we are called upon to do this work of reparation in the most artistic possible manner. A dentist may develop a high order of skill as a manipulator of gold and incidentally save many teeth, yet be devoid of artistic sense in the slightest degree. He is a wonderfully developed mechanic, but not an artist. The dentist who meets with more than the ordinary success in prosthetic dentistry or in orthodontia must be an artist, or his work will not be artistic. We are confronted on every hand with the inartistic in dentistry.

The lifetime devotion of many of the pioneers in our profession to lift it to the highest level has not yet been crowned with entire success. It may be argued that only a small part of the public appreciate artistic dentistry, and sufficient compensation will not be received. To a certain extent this may be true, but the remedy lies in our own hands, and consists in constant efforts to educate our patients to a better understanding of what good dentistry is. That some people know and appreciate better work is evidenced by

the interest shown in porcelain. To this class of patients the necessity for a display of gold is deplorable, and by many will not be tolerated. The growing interest shown by the public in porcelain work is made more manifest in the profession, and all are anxious to come into possession of an outfit and obtain the necessary knowledge to make use of it.

In view of what has been done from an educational standpoint in porcelain within the past three years, it seems inexcusable that any dentist within the pale of civilization should be ignorant on the subject. Everything that can be has been done by clinicians, demonstrators, essayists, and manufacturers to place it within the reach of every practitioner. The different kinds of enamels, bodies, furnaces, and tools to work with is almost bewildering. The display is so great as to be well-nigh discouraging at the outset for beginners. At any of our large conventions may be seen demonstrations of porcelain and furnaces of every form and make.

The advocates of high- and low-fusing enamels apparently meet with equal success. By what means can one determine which methods to adopt? There is only one positive way, and that is to give them all a trial. This would, of course, require not only a considerable expense, but much time. However, it is time and money well spent, as both high- and low-fusing bodies have their points of excellence, and there is much advantage in being able to make use of them as necessity arises. By far the most rapid work in porcelain can be done with Jenkins's enamel, using platinum as a matrix. It can be handled without investment, and the enamel will fuse quickly in the Hammond electric furnace with the lever on first step of rheostat and muffle wide open. If gold is used it must be invested in asbestos, and this requires more time and heat. In the high-fusing bodies the lever must be carried over to the fourth or fifth step for sufficient heat.

The success in using platinum as a matrix—and by this statement it is of course inferred that the whole operation must be successful—is governed by two things,—the platinum must be right and the operator able to manipulate it. These two conditions being favorable, the fit will be equally as good as though gold were used. In either case not only a high order of manipulative skill is necessary, but a thorough knowledge of cavity preparation. Without a properly shaped cavity no man on earth can make a successful porcelain filling. It is one of the details of the work

that cannot be learned at one demonstration, or, in fact, at many. If done as it should be, something besides dull chisels and excavating burs must be used. In this, as well as all other operations where burs are used, they must be sharp and keen cutting, and a good outfit of finishing burs and Arkansas stones of all shapes and sizes kept on hand. All cases differ in some degree, and are governed by environment. One feature common to all and equally important with any other is that the enamel margins must be square and well defined and as smooth as it is possible to make them. In cavities of extreme depth, where it seems unnecessary to cut the enamel margins back to a level of the floor of the cavity after removing all signs of decay, a small quantity of cement may be introduced, which after setting can be shaped as though part of the tooth itself. When it becomes necessary to fill small but conspicuous cavities, do not hesitate to make them of sufficient size and depth to obtain good results. If an absolutely circular shape to the margins seems most desirable, be sure that one portion of the floor be made slightly deeper than the other, and no confusion will be experienced when the porcelain is ready to cement into place. Without some such precaution much time will be lost when time is precious in trying to decide which way the piece should enter the cavity. Labial cavities extending to and under the gum should be first packed with gutta-percha until the gum is well forced back, exposing the margins for proper treatment.

Do not attempt approximal cavities in bicusps and molars involving the grinding surface unless the latter portion can be made strong and thick, with no thin edges to be chipped in mastication, and be sure that the occlusion is made correct. In approximal cavities of whatever class be sure to have plenty of space secured by previous wedging. Cavities of this class that under some conditions seem to be and are complicated become of the simplest character after proper separation. The statement was made in the writer's presence by a gentleman travelling about the country as an expert worker in porcelain, that little if any separation is needed in filling approximal cavities; in fact, much less than for gold. Such an assertion bears the stamp of ignorance and inexperience, and can be disproved by any practical demonstration. In labial cavities the gum takes more kindly to porcelain than any material that can be used. The slight gingival irritation is seldom present; secretions do not collect or remain on it. Frail teeth

needing the support of cement are most happily restored to a condition of harmony and usefulness. Irritation from thermal changes is reduced to a minimum, or, in fact, entirely eliminated. For teeth below medium in structure, and there are many of them that we are called upon to treat and repair, where the best work we can do will be but temporary with any of the other materials, porcelain will do years of service. Its value in repairing the teeth of young patients is beyond question.

There is much to be learned about fusing or baking porcelain bodies and enamels. While it is possible to give a few words of advice or make a few suggestions in a short paper, experience is the only true way to learn how to obtain the best results. Conditions of absolute neatness and cleanliness must attend the manipulation and use of all porcelain powders. Anything in the way of carelessness or sloppiness will surely result in failure. Not only the hands, but the mixing-slabs, tools, and brushes, must be scrupulously clean and free from particles of dust, wax, or metal scraps of any nature. Better results are sometimes secured by more thoroughly tritulating the bodies in a wedgewood mortar. This is especially true if the admixture of different kinds of bodies is required.

Furnaces are made to suit almost every requirement. Where electricity is available the electric furnace is undoubtedly the best. It is compact in form, clean, noiseless, and free from odor. After a thorough acquaintance it does the work in as perfect a manner as possible. While the first cost may be somewhat greater than others, the expense for running it is slight. With reasonable care and common sense the bills for repairs need not be large. The amount of heat is so easily controlled that all porcelain powders, from the lowest to the highest, may be accurately fused. There are also sold properly constructed muffles for use with the gas blow-pipe and gasolene. The gasolene furnaces generate a high degree of heat, and are a boon for practitioners where gas and electricity are not available.

In order to obtain good results with any furnace the porcelain powders must be packed as firmly as possible and well dried out before being exposed directly to the heat. If this precaution be not observed, porosity will surely result. A slow bake is at all times better than a rapid one. In using the electric furnace extreme watchfulness is always required that the porcelain be not over-fused and the colors dissipated. This is in many cases the

reason why the porcelain does not come from the muffle true to the selected shade.

It is an old adage that comparisons are odious, but even if so they are sometimes made with good results. That a thing or an idea is new and novel is not always a good and sufficient reason for adopting it. To be good and useful as well as new it must possess substantial advantages. That porcelain has in many respects advantages over other filling-materials there can be no question, and we are all certainly desirous of knowing exactly what they may be and how we can advance our usefulness by making use of them.

An eminent gentleman of our profession recently read a paper before the Ontario Dental Society in Toronto, the subject of which was "A Comparison of the Relative Merits of Gold Fillings and Porcelain Inlays." He started out by stating three important functions a filling must possess to be a success. The first is to check the ravages of caries. Any one of the materials with which we are familiar will do this with more or less success according to surrounding conditions and as they are indicated. No one would be justified in expecting equally successful results in using cement where gold was indicated. On the other hand, in many cases where gold has proved a failure cement has been a success in checking the ravages of caries. In these particular cases, always assuming that they are so situated that porcelain is available, it is one of the very best fillings to use.

The second function is to restore lost tissue. Of course, this means in as permanent a manner as possible. The second demand is fully covered by the first, in which he asserts that caries must be checked by a filling. That a filling ceases to restore lost tissue when it shows signs of recurrent decay is a self-evident fact. In many cases this recurrent decay will appear within a short time, in others perhaps never. At all events, we are bound to find it more or less, and much of our time is occupied in combating it, and generally by means of renewing the filling from a new foundation or adding to it where tooth-tissue is lost. In such cases there is reasonable room for doubt as to which filling shall be considered the more successful,—the one that not only checks the ravages of caries and restores lost tissue, but also restores the harmonious and natural appearance of the tooth as no other material can, and is then displaced, leaving very little if any signs of recurrent decay,

the cavity being well protected by its uniform lining of cement, or the gold filling that resists displacement for perhaps no greater period of time, and may be found to be thoroughly undermined by recurrent decay.

In the third and last function, that harmony and natural expression be restored, the essayist admits that porcelain has pre-eminently the advantage. This from his point of view is the only one which justifies its use. This one alone, if there were no others, is a strong one to recommend it. But there are others that were not considered by him. No claim is put forth that a large corner of porcelain on one of the anterior teeth, where there is an edge to edge occlusion, or a large grinding surface on the posterior teeth, will stand the same amount of stress and hard usage that heavy gold carefully worked will. But we are justified in claiming, and experience and observation substantiate the claim, that a majority of the conspicuous contour fillings of gold in the anterior teeth can be and are being replaced by men skilled in the art of using porcelain, not only to the great and lasting satisfaction of patients, but to a degree of permanency that compares favorably with gold work in the same place.

PROPHYLAXIS: EXTENSION *FOR* PREVENTION, OR EXTENSION *OF* PREVENTION?¹

BY LYMAN CURTIS BRYAN, D.D.S., F.B.D.C., BASEL, SWITZERLAND.

THE undoubted increase from generation to generation of the ravages of decay in the human teeth leads us to pause in our methodical ways of treating and filling teeth, even though we have made the most approved methods of modern dentistry our own, and ask ourselves if we are doing the best of which we are capable for our patients and getting the best possible results.

It will be conceded that it is the usual thing for the dentist and patients to meet each other annually or semiannually and to find, almost to a mathematical certainty, that there are a number of cavities that require filling. In a practice where patients are well

¹ Read before The New York Institute of Stomatology, May 5, 1903.

trained—among intelligent people—they have been led to expect this and to think that it is unavoidable. The best patients do not wait until they experience pain—they come regularly for examination, and expect the dentist will find cavities and fill them before the pain occurs. They know that cavities left until then are more painful to fill, require longer time to treat, and cost them much more to repair, with greater danger of giving trouble afterwards.

They find it economy in time, money, and pain to go to the dentist often, as often as he thinks fit, and will come exactly at the time recommended. A patient who does so, and who brushes his teeth from one to three times a day, has a perfectly clear conscience as regards his teeth, and thinks he is doing his whole duty. If the dentist fills the cavities present and lectures the patient on more cleanliness or the use of silk between the teeth, proper brushes, and an antiseptic wash, and then shines up the front teeth with a brush-wheel and removes the calculus from the sixth-year molars above and the six incisors below, he too has a clear conscience as to that particular patient. He finds even these first-class patients begin to have recession of the gums later in life, slight discharges of pus may occur about the necks of certain teeth, the gums may become slightly festooned or swollen, or the teeth may get loose in their sockets.

Then he tells the patient that he has *pyorrhœa alveolaris*, probably inherited from his parents, or it may be the result of overwork or overworry, or, lastly, of sanitary conditions. We do not think for a moment that it has been our fault, neither does the patient think it is his fault; we all take it as an indication of increasing years and the result of our environment or of predisposing causes. We could have prevented it. We see cavities, some below or about perfect gold or amalgam fillings; we fill these and advise stronger brushing and other prophylactic treatment by the patient, which he probably thinks is superfluous advice, as he brushes his teeth three times a day and does not think he can possibly devote more time to it.

The next time he comes we have an approximal cavity, say, on the distal surface of a molar, to fill for this patient. We then enlarge the cavity to cover a space which extends to the line reached by the brush, by cutting away with a chisel all frail walls and extending our cavity as Professor Black has (and as Professors Weth-

erbee and Coolidge) advised, in my college days, beyond the point of danger. This is "extension for prevention."

This does protect that particular surface of that particular tooth from further decay, but there are at least five other surfaces subject to decay on that molar. The patient may think we are cutting away from a good tooth to make a large cavity, especially if we use some force with our chisel and break off pieces of enamel which appear to him to be strong. Some ignorant people imagine the dentist makes cavities to fill them, or makes those they have larger to get a larger fee; but we know we have done our duty; we know "Extension for Prevention" is the watchword of the day and is approved by the best men in the profession; so we feel that we are doing the best we can for the patients. We have made a large contour filling that we know will remain a monument to our skill for many years, and we stretch ourselves up in pride and pat ourselves on our lame back and say to ourselves, "Well done, dear old fellow!" Dr. Blank never made as fine a filling as that, and we think we have done the best we could for our patient. But lo! next year there is a cavity on the mesial surface of that tooth and three or four other cavities in the mouth requiring the same laborious, painstaking, and painsmaking care to extend and prevent future trouble in each particular case, and so it goes on from year to year, and the dentist's work is never done.

We have come to consider this the working of natural laws. We have probably thought that we should devote more time to prophylaxis, more scraping and polishing, removing of slightly affected spots on the teeth, flooding them afterwards with a forty per cent. solution of nitrate of silver and polishing away the discoloration again, painting discolored surfaces of teeth with iodine and polishing them bright with pumice and wheels, soaking nitrate solution in around margins of fillings where decay is liable to occur and between teeth which lie closely together and present rough surfaces where the silk passes through, trimming up margins of fillings which irritate the gums and hold decay-producing débris; but after we have had the patient several sittings to make our great operations and do what he recognizes must be done, he is glad to get out of our hands, and we have not the heart to say to him, "Much of this work which we have lately done could have been avoided by doing a number of little things for prevention. It is possible for you and me to keep your teeth in such a state of cleanliness and

antisepsis that much of this decay would not occur. If I could now spend an hour or two more for you in doing little things which we class under the heading of prophylaxis, your mouth would be in a much better condition to resist decay and next year we would not have so much to do."

No;—we see he is tired of it all and glad to get away. We may have scraped tartar off in a hurry and wounded his gums and made the necks of his teeth so sensitive that he will remember us for a week with regret; we know his bill will be large anyway, and perhaps he would pay less willingly the five or ten dollars under the heading "various operations," or "cleansing the teeth," after all the other items, which he finds large enough as it is, and he will not understand why he should pay us as much per hour for "fussing around and killing time" as for making a gold filling, which he knows he had to have made to save the tooth and prevent toothache.

But a trumpet voice sounded in Philadelphia that is reverberating through America in unmistakable tones and echoing around the world, making for many of us an uncomfortable spot in our moral anatomy where our conscience is supposed to lie, Dr. Smith and his apostles tell us we are not doing our duty by our patients. This band of reformers of dental practice tell us we have no right to let people go on in ignorance of prophylactic treatment, or of what can be done to prevent decay; of what their duty is to their teeth and what our duty is to them. We are told we can prevent decay in many places. We should do it. We should see our patients oftener and make fewer large operations; do them also when necessary, but in time bring the tooth up to a higher plane of vitality; attend to the little things like those mentioned above which experience has taught us will prevent decay in certain places. We should spend twice the time and care in treating and cleansing the teeth.

We should use nitrate after drying the teeth, so that it will penetrate and stimulate the tooth to resist decay. We should use iodine to discolor the injurious films and loosen them up about the teeth where decay comes; this we should polish off with pumice powder until the teeth are clean on every surface above and below the gums that we can reach with hand wood-points, engine-points, thin tape, and silk thread covered with powder between the teeth. Places already softened and decalcified should not be pointed out to the patient with the remark, "Next year you will have a cavity

there," or "Come in six months to have this place filled." We should remove the decalcified surface, dry it, paint it with nitrate of silver, and afterwards remove the discoloration with iodine tincture (producing probably ioduret of silver, which is yellowish white).

We should cleanse with delicate scalers—Younger's and other fine, smooth-pointed ones—the neck and under the gum of each tooth, hunting for those little commencements of pockets about the necks and use in them our caustics and stimulants, and not simply tell a patient that in five years he will have pus-discharging pockets and loose teeth. Our first duty should be to thoroughly cleanse the teeth before starting to fill or do other work.

As demonstrator in charge at the Boston Dental College I never allowed a student to commence filling teeth for a patient until he had thoroughly cleansed the teeth. This they considered a great hardship, and shirked it as much as they could; and, judging from most new patients I see, the general run of dentists avoid this as much as my students used to.

Many dentists who spend a half-hour doing this, at most an hour, will assure you that they do this most thoroughly, but a specialist in pyorrhœa will spend hours before he has got a mouth with calculus on the roots clean.

We should gradually induce our regular patients to come often for extension of prevention, and we shall have less extension for prevention. We shall have to practise both, but the time will come when one can point with pride to the glistening, knuckling molars and bicuspid, with their surfaces as nature made them, as we point now to the glistening and golden monuments of our misguided efforts and neglected duty to our patients.

This is an ideal future, and will not be for us, who have done our half- or quarter-century of work, to see its full fruition. Its perfect results will only be seen by the younger men of the profession. It will have to be done by commencing with the young—the very young, and we cannot expect to see results save after a few years, but I feel a solemn faith in the future of extension of prevention, or prophylaxis, in its various branches. If we use all the known methods ourselves, and use them often, seeing patients much oftener than we have done and some as often as Dr. Smith recommends for his hand, wood, and pumice treatment, "once a month," and others every three months when the teeth are weak

and decay often occurs and recurs, we shall more certainly be doing our duty by our patients, and there will come a time—which Dr. Smith tells us he has already reached—when decay will be the exception and the teeth will be strengthened and protected, not simply repaired and patched.

The oftener we see our patients and interest them in their teeth the more personal care they will take of them. We are told that in a short time teeth so treated will take on an entirely different nature of enamel and dentine; that the tooth is stimulated by rubbing with wood and pumice powder just as the muscles are by massage; that the process of building and repair which goes on in the tooth from the pulp will be stimulated inside, to resist decay from outside. We know that nitrate of silver not only kills the germs on the surface and makes the tooth immune for a time, but it has the stimulating power of an irritant, and causes the pulp in the tooth to throw out a protecting wall of dentine of very dense structure which resists decay. We further know that nature carries out this same process to a certain extent in every cavity of decay, but under present conditions decay overcomes this process of repair and goes on in spite of it. We know that the tooth is almost certain not to decay when it is kept perfectly and constantly clean or treated with nitrate of silver. We know that teeth only decay on the surfaces which it seems impossible to keep clean and which are not kept clean. We know that the teeth which look clean have invisible coatings of deleterious and injurious germ cultures, and now we know that it is our duty to remove these often and thoroughly. Do we do it? We should do it. If we cannot do it as often as it should be done, we should use the nitrate of silver solution everywhere every time we see the patient. No fear need be felt of discoloring even front teeth. Enamel which is not disintegrated will not take on the dark color from it. If it does, then we have a danger signal there; the coming trouble is located; we can remove the discoloration with iodine, and any traces of iodine or its combination with nitrate; with ammonia; with iodine painted on the silver stain, and ammonia to wash or scrub off the iodine. Nitrate stains, when fresh, can be removed from the fingers also, and dark remnants are rubbed off with a block of pumice-stone or sapolio. Rubber gloves used by surgeons may be used to protect the hands. I have families of children with frail teeth, which I bathe, from incisors to molars, in nitrate of silver forty

per cent. as often as I can see them, and I am having splendid results with them and no serious discoloration. It is only latterly that I have extended this treatment to the incisors. I have been using it in increasing quantities and more frequently for several years since Dr. Stebbins recommended it so fully.

I had a family in which the mother's teeth had just melted away, and she and her sisters had almost all the teeth back of the cuspids crowned or bridged. As the younger generation came on, I began the use of nitrate on the temporary and permanent molars, and with a little girl, who is now ten years old, I had succeeded so well in saving these molars and other teeth that I was congratulating myself that I had stopped decay in them. Recently I happened to think it was time to begin to clean the lower incisors, which were all erupted. What was my horror to find them all decayed,—six cavities, large ones, in the four new little incisors! Such a case of early decay I had never seen before. I had noticed signs of decay in the upper permanent incisors, and had bathed them freely in nitrate and had kept them from decay approximately, but had never seen the lower incisors decayed at that age. One can think of the beneficial effects of nitrate, by its saving all the other teeth, while these little unsuspected teeth, that almost never decay until all others are filled or crowned, had become damaged under my very eyes.

I have often thought, since Dr. Rosenthal, of Brussels, suggested the abonnement system (Dr. Smith had used it in certain cases), that we should have a system of abonnement for children, for in this way we could get our little patients to come often, and we could demand their frequent visits, and their parents would not think we were doing unnecessary work or seeing them unnecessarily often. As it is, with our fee system, many of us would hesitate to demand the attendance of our patients who have frail teeth as often as it is necessary, for fear they would think we had little to do and wished to make capital out of them. I believe it would be a good system to propose to a certain class of regular patients to take a general average of their work for the last years, agree to treat their teeth for less or for an equal annual sum, and then have them come as often as we feel we could benefit them and as often as was necessary to thoroughly apply our prophylactic treatment.

The first year our time would not be so fully paid, but from the second year the results would be a decided gain for both parties,

for we could prevent decay in less time than we could repair and remedy it, and the patient would be saved much pain and have infinitely better teeth and general health, besides less display of gold and other fillings. Unquestionably pyorrhœa would be less frequent and troublesome, and we should see the advantages of extension of prevention over extension for prevention.

Dental friends to whom I have proposed this treatment object that the great advantages of this preventive treatment would not be appreciated by patients and they would not pay for it as readily as for filling cavities which came in teeth as has been our custom; that it is not our duty to prevent cavities and reduce our work and income; but there are others who look at the subject from a higher plane, and will be more conscientious in treating patients who confide their teeth to us and expect us to do our best to save these, to save them pain, to strengthen weak teeth, to prevent the loss of teeth in later life through Rigg's disease, or pyorrhœa, to prevent the loss of pulps and resulting abscesses, etc.

We are told and believe that prophylaxis secures almost immunity from decay, the great improvement in color and general appearance of the teeth, the diminished sensitiveness of the dentine, the tightening of many teeth which had become loose, the relief from undue sensitiveness of the gums, their marked adhesion to the necks of the teeth, the beautiful color and striation appearing in them, the cleanliness and general comfort of the mouth, and the universal improvement in the character of the breath. These are all matters attracting notice, inspiring confidence, and awakening most lively interest.

Dr. Smith, in his able articles on his special treatment by hand with wood-points and coarse pumice-stone powder applied once a month in certain cases, says, "Recognition will yet be made of the important fact that to the presence of foreign matter on and about the teeth, rather than to the quantity of it, the beginnings of decay and pyorrhœa are wholly attributable. The deleterious influence of a breath perpetually laden with offensive emanations from this source, especially during seasons of salivary inactivity, as in sleep, will ere long be disclosed as an important factor in many pulmonary and digestive disorders, and will be taken account of in medical diagnosis and treatment."

LONGEVITY AND EFFICIENCY.¹

BY WILLIAM W. MARVEL, D.M.D., FALL RIVER, MASS.

FELLOW-MEMBERS OF THE HARVARD DENTAL ALUMNI ASSOCIATION,—It is not enough to be contented with day-to-day freedom from discomfort or pain, but we ought, rather, to look towards longevity as a means of rounding out our professional career in doing as large an amount of good to as many of our fellows as possible. The question whether “life is worth living” has been decided by a majority far too great to admit of any doubt upon the subject, and the voices of those who would fain reply in the negative are drowned amid the chorus of assent. Longevity, indeed, has come to be regarded as one of the grand prizes of human existence, and reason has again and again suggested the inquiry: whether skill can increase the chances of acquiring it, and can make old age, when granted, as comfortable and happy as any other stage of our existence.

Now, how many dental practitioners, restricted to four walls, with apparently nothing but conditions adverse to perfect health, live long and still keep up with the progress of the times in their chosen profession? I am sure this is a very practical question with every man who has been in practice even a few years, especially if he has become fairly busy. So rapidly have been the new developments in the dental world, not simply in fuller knowledge in old fields, but in the broader knowledge taking in new subjects, that for one to attempt to keep pace with it all would require one’s entire time for study and investigation. It is perhaps the feeling of almost hopeless desperation at one’s inability to accomplish this and still do the urgent crowding work with which every day is filled. The impossibility of doing all that one would like has forced many to say to themselves, having been left behind by the too rapid pace, “We cannot cover the whole domain of dental progress, and will select one department.” True, many of us are instinctively drawn by particular aptitude to the special sphere of oral surgery, orthodontia, or porcelain work, and by following one branch zealously and keeping abreast of the times, or even a step in advance,

¹ Read before the Harvard Dental Alumni Association, Boston, Mass., Monday, June 22, 1903.

may become identified with one particular branch of our profession. This may be a solution of the question, so far as they are concerned. But it is evident that in a suburban or country practice we must be fairly well up in the whole field, and must devote a good portion of our time to study and investigation. We are apt to hold ourselves too closely to the bare routine, confining our practice to plain amalgam, cement, or gold fillings, without thinking about what may be accomplished for our own betterment and that of our patient by porcelain work or burnished fillings. We all hear about the preservative property of tin, and have seen clinicians insert fillings of that material; have become enthusiastic, perhaps, in speaking of it to our fellows; but who of us put tin to the practice, and see for ourselves whether or not it is a good thing? We may attend a dental meeting, go to our office primed for increasing our scope, and then, when a case presents itself, say, "Oh, I have not time to bother with it. I think I will put in amalgam; I have used it successfully for twenty years, and I might make a botch of something else." Can we ever hope to progress with such a weak idea of our own ability?

Now, we cannot expect to have a healthy mind without a healthy growth of new ideas, and no matter how healthy our mind is, we cannot put these ideas to use without a healthy body and steady nerves. As old Democritus aptly said, "The force of the understanding increases with the health of the body. When the body labors under disease, the mind is incapacitated for thinking;" and the president of our own University has said, "To attain success and length of service in any of the professions, a vigorous body is essential. All professional biography teaches that to win distinction in sedentary, in-door occupations, which task the brain and nervous system, extraordinary toughness of the body must accompany extraordinary mental powers." Probably no single calling in life demands more of this bodily ruggedness than our own. Constantly standing, often in a cramped position, operating over a living, sensitive being, necessary at times to inflict pain, to endure offensive breaths, to inhale anything but pure air in a 6 x 10 room; through all this, all day long, day after day, we are required to have a steady hand and a cheerful countenance. Unfortunately, too few of us have a system connected with our daily life,—regular time for rising, simple yet wholesome breakfast, regular time for beginning and ending work, and regular exercise.

How much better we would be if a walk of a mile or so after breakfast were indulged in! We could meet our first patient in the morning with a glow on our face and a cheerful word impossible to the dyspeptic or overworked man.

When we pick out an office we should choose it as we would our sleeping-apartments: plenty of fresh air, even in winter; better have the rest of the house overheated, for the sake of having a window open in the operating-room. As to exercise, the methods are too numerous to mention them all. Nothing can surpass the out-door exercise waiting for us to enjoy: membership in a tennis or golf club; daily horseback riding in the early morning or evening, or the frequent walks connected with automobiling. In winter we need not neglect our exercise on account of the weather, with so many gymnasia handy. However, exercise and fresh air are not the only exponents of the healthy body. We must select our food. The simple fare of the laborer is a blessing to him, but while the luxurious diet of the wealthy gourmand affords temporary pleasure, it hides beneath the palate, in tempting viands, a weapon which strikes deep into his vitals, and brings the culprit to nature's judgment bar for punishment. We must build our bodies as well as build our practice. The attitude of mind with multitudes, in reference to the matter of eating, is, "Let us eat, drink, and be merry," forgetting the thought which naturally follows, "For to-morrow we die." "A short life, and a merry one," is a popular modern adage, which contains in itself the confession or the recognition of the relation between a merry life, or, rather, a life of self-gratification and brevity of years. If one would live long, he must eat well; he must live high in the true sense; that is, he must live in harmony with high principle, in accordance with divine order; he must recognize the fact that the stomach may become likewise the fountain-head of disease of every kind and in every tissue.

It seems like "carrying coals to Newcastle" to say to men affiliated with the healing art, that a man can do his best work only when he is in good physical condition, and that good physical condition comes not with neglect of it, but with the cultivation of it.

It is unwise devotion even to a good cause that persistently violates the laws of health in reserving for one's self not time enough for sleep or for physical, social, intellectual, and moral

exercise outside the immediate duties of one's calling. The public is exacting, our own ambition is more exacting, but the laws of health are even still more exacting. It would seem that, with the best system possible for securing the dentist's rights to himself, it is almost impossible, as one goes along, to keep even with the world. Where the debt of time for rest and recreation is, in spite of himself, constantly accumulating, there is no other remedy but to exact payment by a vacation (annually) long enough to liquidate the account for lost nights and loss of control over our nerves. This is needed for the sake of health, but the infringement on the man's time needed for self-improvement, for study in his profession, for general culture, demands a like liquidation. Whether this may be best balanced by time each year set apart for this purpose, or whether the obligation may be allowed to accumulate on the "ten-year life insurance dividend period basis," it must be met, if one is to keep a high place in his profession.

Much could be said about the proper way to live our daily life, our attention to our eyes, our posture while operating, and scores of other points, but I have in this brief paper attempted to show that in this age of high pressure and rapid progress the dentist, both as a man and as a machine, needs more time than is usually taken for repair and recuperation. By various devices alluded to he may, as he goes on, reserve some time for health and culture, but, apart from this, for the purpose, more time must be taken and more opportunity sought regularly. It may seem to some a losing investment at the time, but is more likely to prove profitable, whether as regards the greater pleasure, the larger usefulness, or the longer lease of life.

THE IMPORTANCE OF THE MESIO-DISTAL RELATION OF THE TWO ARCHES DURING CHILDHOOD.¹

BY DR. S. M. WEEKS, PHILADELPHIA.

I WISH to invite your attention for a few minutes this evening to a phase in the care of children's teeth which it seems to me has been neglected. We hear a great deal about the proper care of

¹ Read before the Academy of Stomatology, Philadelphia, March, 1903.

the mouths of children for the preservation of their teeth, and, when decayed, about the best methods of replacing lost structure, etc. All of this we know to be of fundamental importance, but there are other conditions equally vital.

It is to the matter of irregularities and the mesio-distal relation of the two arches to which I refer. I believe the early recognition of certain abnormal tendencies in the eruption of the teeth to be of such importance that its neglect makes us responsible for a long line of subsequent difficulties. On the other hand, a right understanding of the conditions present and those sure to follow enables us, by small effort, to correct these errors of development, which, if allowed to continue, would cause us much trouble and our patients much inconvenience.

In using the term children in this paper I wish to explain that I mean those in that period of life from the time the first permanent molars are erupted until the time when all of the teeth except the third molars are in place; in other words, that period when, if asked to give advice about an irregularity, it has been customary to say, "Oh, better leave it until all of the teeth are in place." The bugbear of procrastination has attached itself to us so long that I want to emphasize my belief that this is an error for which without injustice we could be strongly censured.

There is no doubt that in many cases, from the age of six to fourteen, we find certain irregularities beginning to be manifest concerning which it is hard to decide as to the best course to pursue. Many are cases where very little effort on our part would have set these irregularities right at this age, when, as with many which I have seen, when fully developed and fixed, two years was considered a short time in which to correct.

The time at my disposal is so out of proportion to the number of phases which should be considered that I shall hurriedly pass many, taking up more in particular one phase, the effects of which seems to be so pernicious and far-reaching as to brook no delay in receiving attention. This phase is evidenced by the loss of the proper relation between the superior and inferior arches. For a starting-point we must assume some condition which will indicate the normal relation. From the fact that the first molars are the first teeth of the permanent set to erupt, I believe we can do no better than to depend on them as a basis from which to start. If

these are normal, then the two arches may be said to be correctly related to each other mesio-distally.

There are several ways in which variations from the normal may be manifested, only two of which will concern us in this paper. One is where the mesio-buccal cusps of the upper first molar occludes mesially to the mesio-buccal groove of the lower first molar. The other is just the reverse. Only, I believe, in hereditary cases is this condition noted before the eruption of the first molars; after that time it may develop at almost any stage up to the time of the fully erupted denture, and in a few cases not even excepting the third molars.

There are several groups of conditions to which we may look for causes of this abnormal relation. The first we might call a local group, because it is in conditions existing in the arrangement of the teeth themselves that we find the cause. These are many, and I can take time to enumerate only a few: Loss of a deciduous tooth, thus allowing teeth to move forward or backward, as the case may be. Loss of space in the arch through decay on the approximal surfaces. Both of these conditions make it possible for the first permanent molars to take a position anterior to that which nature intended. Too long retention of a temporary tooth, thus deflecting the permanent tooth which is to follow. Too early eruption of some of the permanent teeth. A supernumerary tooth in the arch, enlarging it beyond the normal. Loss of a permanent tooth, etc. In fact, any obstruction which fails to allow the lower jaw to be occluded with the upper in its normal position.

In another group of cases we may find our cause arising from conditions outside the dental apparatus. This would be so in cases of mouth-breathing, persistent habits of thumb-sucking, lip-biting, etc.; also in some cases I believe it to be possible for the third molar erupting under certain conditions to be a cause.

In many of these cases we must look also for some change in the temporo-maxillary articulation. Were it not for some abnormality in this articulation we would not find these classes of mal-occlusion having such a marked effect on the physiognomy. Again, when we find, under favorable conditions, that we can in a few weeks effect a change of several millimetres in the relation between the superior and inferior arches, we feel that this must have been by the means of a change in the articulation rather than in the

alveolus. There are several reasons why this phase should receive attention at the first indication of a developing abnormality.

It is in these cases that the facility of mastication is most interfered with. It is not so very rarely that we find cases where the lower jaw is drawn forward to such an extent that, in conjunction with a contracted upper arch, we find very few, often no more than four, teeth in occlusion.

Next are those many cases of altered appearance for which this condition is responsible. I believe we have small conception of the number of faces which are given an appearance of weakness because the mandible has been allowed to drop back to a point distal to the normal. On the other hand, the reverse condition, while it offers no suggestion of weakness of character, brings us no less number of facial deformities.

In closing, I wish to say just a few words relative to the correction of such cases. Of course, it would be much easier to pay attention to the early conditions, thus preventing the occurrence of any irregularity; hence, if a tooth is lost, that space occupied by it should be retained. If space has been lost by caries on the approximal surfaces, it should be regained and retained by the use of gutta-percha or some other proper method. Naturally, whatever be the cause it should be removed. Of course, there are many cases that we as individuals do not see in time to treat in this early stage. While it is essential that all cases of irregularities should be treated as soon as brought to our notice, it is doubly true of those where the normal mesio-distal relation of the two arches is being lost. It is then that the loss of facial harmony is being effected, and we have another factor entering, which in importance is perhaps second to none.

In cases of this type it has sometimes seemed easy to extract teeth and correct a prognathism, but this procedure does nothing towards correcting abnormalities in the facial lines. I believe that there are but a *very* few of these where extracting should be countenanced. The teeth should be placed in their proper alignment and the arches restored to their normal occlusion, thereby bringing the facial lines into harmony.

SEPTIC INFECTION FROM A TOOTH.

BY JAMES R. PIPER, D.D.S., BOSTON, MASS.

A SHORT time ago the following case came to my notice, and the results to me were little more than we usually expect to get from cases coming under the head of abscessed teeth; in fact, complications set in which seem almost impossible to connect directly with a tooth. And yet why should not we have just this sort of thing take place when favorable conditions exist?

The case referred to is as follows: March 1, Mrs. W., aged about thirty-eight, who had always enjoyed good health, first noticed a red spot on the left cheek in the region of the angle of the inferior maxillary bone. March 5 she visited her dentist and was advised by him to have the lower twelfth-year molar on the left side extracted. March 8 a second dentist was called upon, who told her the gum was so badly swollen he did not consider it wise to extract the tooth, but consented to lance the swollen parts from the inside of the cheek, telling the patient he thought her trouble was at an end. March 11, still suffering with swelling and pain, dentist No. 3 was visited, who administered gas and extracted the offending member, assuring the patient that the whole tooth had been removed. This not giving her the desired relief, she again applied to dentist No. 1, who removed what he said was a part of the tooth supposed to have been extracted by dentist No. 3. March 22 her physician made a deep incision with a bistoury through the swelling from the outside, but without giving the desired relief. April 5, the face looking so badly and the patient's physician realizing that something more radical must be done, he opened up the parts again, and this time maintained a drainage by means of silk ligatures, the physician making several visits a day, considering his patient in a serious condition. Under this treatment she improved until April 25, when during the evening of that day she complained of pain in her left hand. The pain grew worse, and by midnight it was so severe she was obliged to hold her hand in water as hot as the flesh would tolerate in order to get relief. She kept the hot-water treatment up until morning when the physician arrived.

A consultation was held with one of the surgeons from the Boston City Hospital. The hand was found to be badly swollen,

and the arm was somewhat swollen as far up as the elbow, but above, to the patient's shoulder, it was in a normal condition. Ether was administered, the opening in the cheek enlarged, and the bone thoroughly curetted. Another opening was made in the palm of the hand, and both were dressed with lysol gauze, the dressings being changed every day until the parts healed by granulation. After the operation no pain was experienced by the patient.

The swelling of the hand was of septic origin, due, probably, to the patient having a scratch on the palm which in some way became infected from the discharge on the side of the face.

There are three points which this case brings out quite forcibly,—viz., first, do not allow such cases to run too long before operating; second, absolute cleanliness should be maintained; third, operate from the inside of the mouth.

While the case just cited happened to a person of liberal means, she could not have realized the importance of absolute cleanliness. This is not an uncommon failing among many of our best people, and we should not lose an opportunity to inform our patients of the seriousness of neglect.

PORCELAIN: A FAD OR A FACT.¹

BY DR. JAMES ROSS, FITCHBURG, MASS.

IN asking the question, "Is the so-called porcelain worker of to-day a faddist?" we might answer, that it depends on the spirit in which he has taken up the work. In the March number (this year) of the *Dental Cosmos* is a paper by Dr. C. N. Johnson, of Chicago, on "The Professional Spirit." That paper struck a responsive chord in me, and I wish every man in our profession might read it thoughtfully and profit by its high ethical teaching, and yet what he calls "the bone and sinew" of our professional faith,—a spirit of broad humanitarianism which looks only to the

¹ Read before the Massachusetts Dental Society, Boston, Mass., June 3 and 4, 1903.

greatest good for the greatest number, and which rigidly excludes selfishness of motive or narrowness of purpose.

The tendency, perhaps, in all professions to-day, but surely in ours, is to descend to the trade or commercial spirit, and I say *descend* without any disrespect for the tradesman or the man of business. The true professional man gives free to the world the results of many weary days and nights of thought and study. This is what I mean by the *spirit* in which we have entered this field of our work. I am glad to give my testimony that the men I have met as pioneers—leaders—in this work have impressed me as men of honesty and earnestness of purpose. But it is not to the few bright lights, but to the many humble workers, who, like myself, wish to avoid the fads and take up the facts, that I wish to give a few practical rules as a working basis. First, be convinced by what you have seen and heard, that it is a real part of our profession. Find fault as much as you wish with cement joints, imperfect colors, misfits, and the like, but finally make up your mind that it really does preserve teeth and do service in many places better than any other filling we now have. Again, make up your mind whether you have enough of that true professional spirit that will allow you to spend money and time for the good of humanity and your profession, when you might be making money putting in fillings of gold, silver, and cement. But if you belong to that too large class who put gold caps on teeth, from centrals to third molars, simply for the money there is in it, don't for a minute think of porcelain.

So much has been written of late years about the methods of using porcelain for fillings, that it seems almost unnecessary to write a paper on that subject, as it must be only repetition, but still we must repeat, and continue to improve.

If we have really decided to put porcelain alongside of other materials in our practice, the first thing to determine is the method. Experiment as much as you wish, buy as many outfits as you can afford later on, but at first decide on one method, and do some thorough practical work, for be convinced that this is no catephoric painless dentistry fad, but that it has come to stay. Your own first inlays may not.

Now, in a broad way, the two methods are high- and low-fusing porcelain bodies. It is not my intention to criticise or champion either method, as I have seen most excellent work done

by both, but my own actual experience has been with high-fusing bodies. The difference between the two methods is that in high fusing you must use platinum 0.001 for the matrix, and in low fusing, gold-foil No. 30 or 40 in some cases. The platinum matrix can be placed directly in the furnace, but the gold must be embedded in powdered asbestos. Do not try to place a porcelain filling where you cannot get a perfect matrix at the start. Do not try pin-head cavities. In other words, there are safe, doubtful, and unsafe cavities for porcelain.

Among the most suitable places are the cervical margins of the labial and buccal surfaces of all the teeth from right bicuspid to left bicuspid, upper and lower, but particularly upper. Also proximate cavities, corners and cross-sections, mesial or compound cavities in bicuspid or first molars, provided there is room. Use no rubber dam, unless to insert completed filling, and even that is not necessary, only permissible. And the reason is that it will fool you on color, and your patient is much more comfortable without it.

Anneal your platinum in the furnace. Do not allow the platinum to double on the edges, but never mind the breaks in the bottom of the matrix. Have the porcelain as dry as possible, and run under tapping. Usually burnish a second time after the first bake. Never take off the matrix until you are sure the filling is finished, as you cannot fuse after that is done. To remove platinum, peel from edges back to centre. Insert with cement, quite soft, being careful of color.

Now let us for a little consider that other important part of our subject, that comes so frequently into our practice after neglect or accident has done its work,—crowns. You will pardon me if I speak forcibly and plainly in advocating porcelain or artistic work as against the indiscriminate use of gold caps. I say that any man who puts a whole gold cap on any of the incisors except in rare cases, does not know his whole business. Then what can be done? Use one of the many styles of porcelain crowns. Mind you, I do not condemn all gold crowns, for there is nothing like them for molars and bicuspid in many cases.

There are two classes of teeth that are extremely bothersome, and I suppose they are the ones that so many of our brethren feel must be capped with gold, as there is nothing else to do with them, even on centrals and laterals. The first of these is the root that

is hollowed out so badly by neglect or split from using some style of pin crown. You cannot use a pin crown and expect it to hold in place with cement or gutta-percha, but it can be built in with amalgam. The second is the accidentally broken tooth, but with the pulp still protected and healthy.

Of course, there have been several kinds of crowns on the market for years, to be used with the post built in, but to those who have a furnace for porcelain work the variety is largely increased. The first and best of that kind is the jacket crown, advocated so strongly and used with great success for years by my instructor in this work, Dr. W. A. Capon, of Philadelphia. With the jacket crown you get the same principle as the gold cap, which I think is the strongest principle, and for bicuspid teeth, when you have a fastidious and æsthetically inclined patient, they are much more acceptable.

Then there is the banded pin crown (similar to Richmond) and the tube crown, which is strong, quickly made, and inexpensive, and a large number of variations for the ingenious worker.

In closing, I again wish to refer to the professional spirit, which is broadening in its tendencies and takes a man out of the narrow rut of self-conceit, and if I have in the least added to the inspiration to make our profession a constructive one in the line of beauty, as it is in nature, then will I count this time well spent.

THE ROUND VACUUM CHAMBER.

BY P. B. M'CULLOUGH, D.D.S., PHILADELPHIA.

IF the vacuum chamber were placed in a plate on the right side midway between the median line and the ridge, the resistance to force upon the teeth would be greatest on the left side, as the power of a lever is multiplied by its length.

A painter's scaffold may be suspended by a rope caught over the end of a board extending beyond the edge of a roof a few inches, insurance against the scaffold falling being one with the length of the board resting upon the roof. Therefore the farther the chamber is from the ridge the more secure the plate against tilting.

As the force applied in the molar region will be the same on either side, the middle of the chamber must be over the median line of the vault. In order that the greatest possible surface of perfect adaptation of the plate may be attained, the chamber must be the smallest possible consistent with the exhaust of a certain volume of air.

And in order that the chamber may be farthest away from the line of the application of force, and that the greatest field of plate contact may be attained between the edge of the chamber and the ridge, it must cover as small an area as possible.

With the form of chamber having a flat side parallel with the back edge of the plate, the ingress of air is easiest and the relief of the vacuum quickest because the edge of the chamber throughout its entire width offers an extended surface for the ingress of air in the direction from which the vacuum is most naturally relieved. With the round chamber but one point is nearest the edge of the plate, hence the dam is most complete.

The leverage on a plate is greatest in the incisal region, and as the support against tilting would be in proportion as the chamber is back, it should be so placed, modified by the provision that its nearest point to the back edge of the plate should not be less than one-fourth to three-eighths of an inch; and further, that the tissues are more sensitive in the vault than anteriorly at the rugæ where the power of suction is greatest. •

The diameter of the round vacuum chamber patterns should be five-eighths, three-fourths, and seven-eighths of an inch, and one-sixteenth of an inch in thickness. The pattern may be adapted to the model by first concaving it with the fingers free handed, then upon the model with two burnishers.

It can be secured in place by forcing the three-eighths-inch point end of two pins through each side of the metal on a line with the centre, grasping one at a time with pliers, and directing each point in an opposite direction, slanting to one side, using counterforce with a finger. Then burnish over the perforation.

Reports of Society Meetings.

THE NEW YORK INSTITUTE OF STOMATOLOGY.

A MEETING of the Institute was held at the Chelsea, No. 222 West Twenty-third Street, New York, on Tuesday evening, May 5, 1903, the president, Dr. J. Morgan Howe in the chair.

The minutes of the last meeting were read and approved.

Dr. E. A. Bogue exhibited three specimens of color—first, as it presented; second, after bleaching; and the third, seven years later—from a case in which he had treated two central incisors in 1896, and they had retained their color remarkably well.

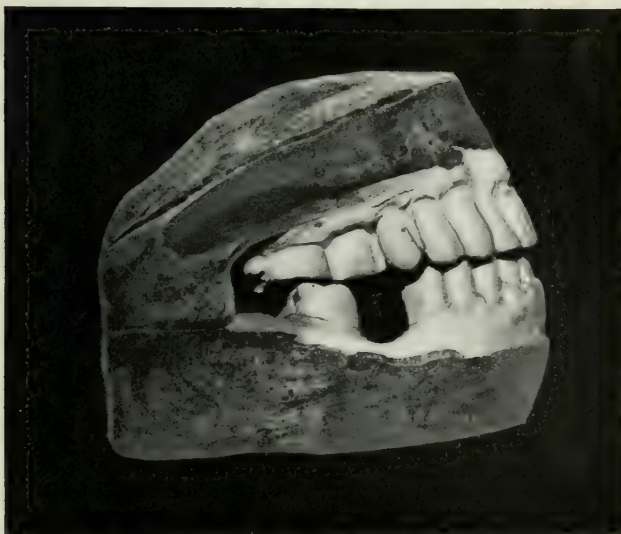
The following method was used. The pulp-chambers and canals being unfilled, the teeth were first treated with carbolic acid, and as soon as possible the apices of the roots were filled with oxychloride of zinc, carried there on a broach wrapped with cotton. After the cement had set, the roots were cleared and considerably enlarged. The teeth were thoroughly dried with hot air, and oxalic acid full strength was put in and allowed to remain four or five minutes. The teeth were wiped out and dry chalk put in and left overnight. The next day oxalic acid was again applied, and when that had accomplished its work a twenty-five per cent. solution of pyrozone was used. The root-canals were then dried and varnished with copal dissolved in ether and filled with oxyphosphate of zinc.

Dr. J. Morgan Howe presented some models showing the restoration of teeth that had been badly worn by the stress of mastication. Two of the models are illustrated, one representing the case as it presented, and the other showing the condition after the restoration. The case was seen in 1898, when the patient complained that he was not able to eat well. The first model illustrates the condition which then obtained. (Fig. 1.) The wearing down had been very great. The upper incisors were impinging on the gum, inside of the lower incisors, and a good deal of friction on the gums resulted from mastication. It was noticeable that the teeth were entirely free from tartar before restoration, but it began

FIG. 1.



FIG. 2.



to accumulate afterwards. There was very little decay. It was a pure case of abrasion unaffected by erosion. The restoration was effected without devitalization of any pulps, and in the case of the incisors and canines consisted of a base with three or four pins entering drill-holes in the dentine, and to the periphery of this base a ferrule was soldered. Then a porcelain facing was attached, backed and built up behind with clasp gold. The molars and bicusps were built up with solid gold cusps made of clasp-gold and solder, attached to the teeth by means of pins entering the dentine and ferrules. Phosphate cement was used for attachment. One or two of the molars were restored with a hard amalgam containing a great deal of silver. This was built around pins set with cement in drill holes in the teeth. These fillings were packed and contoured by means of temporary ferrules or ring matrices around the teeth. (Fig. 2.) Within four years the patient had ground down all these hard gold tips to such an extent that some of the facings were broken off, so that repair seemed to be demanded, and yet the abrasive force was so great that there was little prospect of permanency. In no case had any of the tips loosened from their attachments to the teeth, but the metal was worn away. This case represents the maximum of abrasive force exerted in any case Dr. Howe has seen. At the other extreme the minimum of abrasion may be represented by the case of a patient for whom he had filled a large cavity in the morsal surface of one of his lower molars with tin-foil more than twenty-five years ago. This filling, although somewhat worn, is still in good condition. Dr. Black found that the force of occlusion varied in different patients from sixty to two hundred and seventy pounds on the molar teeth, according to a report of experiments in 1895. Dr. Black stated that the condition of the peridental membrane had more to do with the exertion of this force than the muscles of mastication themselves.

Dr. Howe expressed the conviction that, notwithstanding the unfortunate failure of the operation first described, similar restorations in other mouths had been so successful that it is undoubtedly a desirable procedure.

In most mouths the restoration described would have endured all stress for many years.

Many patients exert so little abrasive force in the process of mastication that the value of tin and gutta-percha as filling-ma-

terials should by no means be overlooked, even in situations where exposed to some abrasion.

Dr. C. O. Kimball, in connection with this case, presented models of a similar case that he had treated several years ago. He had been handicapped in this case, as the patient insisted that no gold show, and objected to any artificial appliance. It was interesting in that two or three different plans were tried with different teeth. Dr. Kimball presented one model of the case after three years' wear. After two years' wear the cusps had broken away from two of the teeth and had been replaced. Of the canines, some of them were built up with gold and some with soldered gold tips as described. Around one of the molars a platinum-lined gold band had been placed, larger than the tooth at the grinding surface, to give a greater articulation, and the whole filled with amalgam. One bicuspid had been restored by means of a gold crown, carrying a shoulder that pressed against the adjoining tooth, thus bringing these two teeth together.

The secretary read a paper by Dr. L. C. Bryan, of Basel, Switzerland, entitled "Prophylaxis: Extension *for* Prevention, or Extension *of* Prevention."

(For Dr. Bryan's paper, see page 831.)

Dr. E. A. Bogue was a radical in his views, as many of the brethren knew. He strongly believed that when natural conditions were interfered with, then was the beginning of suffering; when the arrangement of the teeth was changed by extraction or by filing, so that the tuberosities of the teeth failed to come into proper contact, the deposit of tartar began. Of course the deposits did begin from other causes, but not very much, as a rule, when the mouth was healthy. This was a body of gentlemen who seldom if ever saw a healthy mouth. The mouths they came in contact with were "sick." He had in mind a gentleman, fifty-three years of age, who had never in his life used a tooth-brush, and yet whose teeth were clean and white and whose gums were in a perfectly healthy condition. It was explained by the fact that the teeth were well formed and rounded; the position of the teeth in the two arches was almost what it ought to be and the man's life had been an out-of-door life. His food had been plain and simple. He always used from one to three glasses of water to rinse his teeth. The result was that his teeth were practically self-cleansing.

The leaning forward of the posterior teeth, caused by extraction,

leaves a beautiful ledge for the collection of tartar. Dr. Bogue was pleased to see that Dr. Bryan had taken up the cudgels in this direction and wished we all might.

Dr. S. E. Davenport thought the paper just read had taught Institute members that Dr. Bryan was a progressive man and one who possessed finger ability of a high order. Wielding a facile pen, he had taken to thinking very deeply upon professional subjects. Dr. Bryan was so anxious to do the best for his patients that he had for some time followed the plan of taking casts of practically every one whom he was called upon to serve to any considerable extent, the consequence being that when operating Dr. Bryan had before him not only the chart, but also the cast. The advantage of the cast over the mouth itself in studying the relation of the teeth is well understood, the cast being arranged so that the occlusion of the teeth can be observed from behind. It might seem a method entailing a great deal of trouble, but for one desiring to do the very best for his patients it had everything in its favor. There were many ways in which the plan saved a great deal of time, and made better service possible.

There was one point Dr. Davenport would like to emphasize and commend,—the use of iodine upon and between the teeth, and not merely as an adjunct to take away the green stain upon children's teeth. It would be noticed in using it that where there was any deposit whatever the iodine stained it, thus pointing out the dentist's duty and aiding him chemically in the performance of it.

Dr. H. W. Gillett was not able to get away from Dr. Bryan's first paragraph. It seemed to him a wrong assumption. Dr. Gillett did not think it would be universally admitted that there was an increase of decay of the teeth from generation to generation. It seemed to him that such a statement was not a good foundation for a paper, and he would not concede that it was the usual thing for patients coming for annual or semiannual visits to have, "for a mathematical certainty," a large number of cavities to be filled. If he found such a condition in the mouths of patients who only came *once* a year he certainly would not have a clear conscience. Either he would not be doing his whole duty or he would lack sufficient force to make his patients do theirs. Dr. Gillett felt that pyorrhœa developing in young patients constantly under his care was largely his fault. One of the points that surprised him most in Dr. Bryan's paper was the apparent difficulty

made over doing the necessary *little* things about the mouth. It is just as essential that these little things be placed upon the examination chart as that actual cavities be put down. They were just as much a part of our work. He tells his patients that cleansing their teeth is the most important operation he does for them, and feels that the day is coming when the extension for prevention will be much less necessary. Within the next decade there was going to be much more preventive work done along lines already pointed out. Extension for prevention would still be necessary, however, in many cases. We will always have with us the patient who goes to the dentist once in five, seven, or eight years, and after being put in order does not expect to come for another ten years, and hopes never to come again.

Dr. Gillett was heartily in sympathy with the work Dr. Bryan had outlined. Anything we can do to prevent decay, we should do. Thoroughness in all kinds of work would help us in this direction.

Dr. Kimball's eye, too, was caught by Dr. Bryan's first phrase. The result of his observation differed from that of Dr. Bryan's. The teeth, as he saw them, were improving rather than deteriorating. He would feel rather sorry for the profession if this were not so. At the same time there was no question that we did not do as much of this preventive treatment as we should. Dr. Kimball was inclined to think, with Dr. Gillett, that we did not expect to find, in the mouths of our regular patients, a large amount of decay from year to year. He called to mind an article by Dr. Jack in which he stated that in his regular work, by his system of sending for patients whenever he chooses, he allowed in the average mouth three appointments for work each year, besides cleansing. Dr. Kimball found that this same rule applied in his practice.

He wanted to say a little about Dr. Smith's position and work. Dr. Bryan alluded to it. It was worth while to say now, for our elucidation, that while Dr. Smith makes the claim that this process of cleansing teeth with sticks and pumice, and that he is the author of this method of prophylaxis, in reality the oldest of us were children in the profession when this was taught us and taught us thoroughly. I was taught it as the very foundation of my work. Old Dr. Hawes would say to us that when we would get a mouth in good order we must go "Dunning" it. Dr. Smith does not make it clear why he objects to the engine in this work. The

reason is this: the deposits of tartar and other deleterious matter which may cause the loss of the teeth, especially the loss by absorption of the gum, lies just underneath the edge of the gum. This could be reached by the stick and pumice, and this method, so far as he knew, was the only method by which that part of the tooth where the deposit lies could be reached. When we remove this tartar by means of the scaler we may consider the tooth pretty thoroughly cleaned, but we forget the microscopical particles still remaining that form the nuclei for the redeposition of tartar. Hence the necessity for polishing under the gums. Dr. Kimball felt that Dr. Smith had failed to make his reasons for this work clear.

Dr. Evans had been very much interested. He did not think he could do more than to mention a little incident that came right home to him. As a matter of experiment he had decided to pursue a thorough system of cleansing in his daughter's mouth. She had a beautiful set of teeth, and he had cleansed them regularly at intervals of a month up to last year. The result was that up to then she had never developed any approximal cavities and had no fillings at all with the exception of a few in the crowns of the molars. Last year, through pressure of business and professional work he had neglected it. As she was going to Europe for a year or two, he recently carefully examined her teeth, and much to his astonishment and regret he found the approximal sides affected in nearly a dozen places, with cavities or superficial decay. He was now urging upon his patients the necessity of frequent cleansing, especially in cases of pyorrhœa. He even insisted upon this, to the extent of giving them up as patients if they would not comply.

Dr. J. B. Locherty was very much pleased with Dr. Bryan's paper, particularly the suggestion regarding the use of nitrate of silver and iodine. Dr. Locherty would also recommend dioxygen as an agent in this connection as being of great assistance in removing the green stain on children's teeth. His method was to adjust the rubber dam, apply the dioxygen and rub it over the teeth with a large heated burnisher, then polish with orange-wood sticks and pumice.

Dr. F. Milton Smith stated that it seemed to him that the whole thing was a matter of thoroughness. He could not see that there were any very new things suggested either by the paper of the evening or by Dr. Smith, of Philadelphia. It seemed to him

that if Dr. Smith had announced that we were at times a little careless and that we ought to be more thorough, he would have hit the nail on the head. To this charge he would plead guilty. However, he was improving. From reading journals of an earlier date he was impressed with the fact that there had been thorough men previous to this time. He believed there were thorough men outside of Philadelphia and this side of Switzerland. He was not sure but there were some connected with the Institute of Stomatology.

He suggested that a few years ago Dr. Bonwill, of Philadelphia, gave just such an exhibition in his office as has been given by Dr. Smith. As he remembered it, the universal opinion of the men who visited Dr. Bonwill's office at that time was that the mouths exhibited were in perfect condition. Dr. Smith remembered the suggestion that Dr. Bonwill insisted that his patients come frequently to his office that he might examine their mouths and point out where they had failed to thoroughly cleanse their teeth.

Regarding the suggestion of Dr. Kimball, of polishing with a stick and pumice down under the gum, he had in mind a paper read fourteen years ago by Dr. Geo. S. Allan, and published in the *INTERNATIONAL DENTAL JOURNAL* of December, 1889, calling attention to the importance of securing a smooth, polished surface of the neck of the tooth just below the gum line, whether that surface was covered with tartar or not. Dr. Allan, in this paper, laid great emphasis upon the damage done the minute glands next the neck of the tooth through this roughness, causing them to throw out secretions which, he thought, were exceedingly harmful to the teeth and surrounding tissues.

Regarding people not being willing to pay for "these little things," Dr. Smith thought that the habit dentists have of rendering bills in the way they do—one gold filling, so much, and one gutta-percha filling, so much—was all wrong. People should be taught to pay for professional services.

Dr. Smith mentioned a case in point, illustrating the good results of constant care by the dentist. It was that of a young man (now twenty-eight years of age) who came to him twenty years ago. His parents came into his hands at the same time, both being affected with pyorrhœa, the father having lost half his teeth at thirty. The mother insisted that the child should go to Dr. Smith whenever he was sent for, and as a result his teeth to-day are practically perfect and free from any disease of the gum or

sockets. Dr. Smith thought it right and proper to send for patients. The best and most appreciative patients he had were those who responded to these notices.

In connection with the use of pumice for polishing Dr. Bogue stated that we use this instead of chalk, because it floats on water and will float out while chalk will not.

Dr. Evans stated that in pyorrhœa cases especially it was his custom, instead of notifying them, to make another engagement then and there, notice of that engagement to be sent the patient one week previous to the date. Since he had adopted that plan things had been working very smoothly.

Dr. Swift had tried this same method mentioned by Dr. Evans, and had found it to work excellently well. In connection with hydrogen peroxide, he would recommend the preparation put up by the American Chemical Company as being very stable, and containing less than one-twentieth per cent. acidity. It comes in five-pound bottles at one dollar and fifty cents per bottle.

Dr. Dailey spoke of the necessity of an alkaline condition of the mouth in order to dissolve this deposit around the necks of the teeth. In an acid saliva micro-organisms developed very rapidly, but if alkaline the spores will not develop. He thought we should take this home with us. Dr. Williams had shown teeth of animals that had commenced to decay and then stopped, showing that at some period of drought or migration there was a condition of malnutrition, but when the animal had resumed his normal environment the decay stopped. An alkaline condition of the mouth was necessary. The majority of civilized people had an acid saliva. Dr. Dailey strongly advocated the use of a solution of bicarbonate of soda to restore the alkalinity of the saliva.

Adjourned.

FRED. L. BOGUE, M.D., D.D.S.,
Editor The New York Institute of Stomatology.

MASSACHUSETTS DENTAL SOCIETY.

(Continued from page 710.)

THE secretary read the minutes of the last meeting.

Dr. Maxfield.—I desire to make a motion, and it is that the president be requested to give his address at the first order of exercises at the afternoon session.

The above motion was regularly seconded.

The President.—It has always seemed to me that if there is one society that needs information on the question of courtesy and the question of time, it is a dental society. If you invite gentlemen to come here and read or discuss a paper, the Society ought to be courteous enough to give them precedence when their time has arrived. The president simply waived the privilege this morning of giving his address in order to be courteous. If it is the wish of the assembly that my address should go on at two o'clock, well and good, but I prefer that we should go on with the regular order of business at two o'clock and listen to the address of the president when we have time.

Dr. Maxfield.—I entirely disagree with the president with regard to the President's Address. I regard it as a very important matter. I consider the life and prosperity of the Massachusetts Dental Society of great importance, and the constitution plainly says what the president shall do. He shall state the condition of the Society during the term of his office; he shall tell us of its progress or retrogression; and I consider it of great importance, and the only criticism I would make on the programme is that its place is one of the opening exercises. I think it should appear in the programme at a time when we know from past experience when the largest attendance will be.

Dr. Maxwell's motion was then put and carried.

A recess was then taken until two o'clock P.M.

Afternoon Session.

President Flanagan called the meeting to order and resigned the chair to Dr. Waldo E. Boardman, Boston, Chairman of the Executive Committee.

PRESIDENT'S ADDRESS.

Dr. Andrew J. Flanagan, Springfield, Mass.—The president's address may be regarded from various points of view. It is rather a common thing for the president's address to paint the dental horizon in glowing colors. In a national organization it is perhaps a grand thing to do that, but it seems to me that in a State society, which is one of the many units which go to make up the great whole, it behooves us to deal directly with that which interests that one unit.

In my address to-day I simply wish to deal with the business of the Massachusetts Dental Society, and with that of no other society.

During the year it has been my pleasure to be associated with various men on various committees, and to become intimately acquainted with their work, and during that year I have jotted down, as is a custom with me, many little things, and I shall speak to-day from the little hints which I have gathered up and which I have thought would be of value and interest to our society.

In the first place, I wish to refer to the word "Membership." Our society needs to grow if it is to be the representative of a profession which is bounded only by the boundary lines of the State. In order to grow it is necessary to have some means to attract membership. It has always seemed to me that no State organization can afford to form itself into a little coterie of members. The State society must pre-eminently represent that State, and in order to do so it must build on long, broad, and familiar lines. You cannot make a select society of it. That is an utter impossibility if you wish to progress.

I speak here to-day with the hope that some means will be devised in the various districts for the coming year whereby we may bring into membership a greater proportion of the legitimate practitioners of this State.

There is a duty devolved on membership. There is a duty devolved on anything if you wish to put your whole power into your work. The old practitioner owes a duty to the young practitioner, and the young practitioner owes a duty to the old practitioner. It is the duty of the old practitioner, when a young man starts in practice in his community, to lend a helping hand; to show him the advantage of being an ethical man and how much better it is to

belong to the State organization than to remain outside of its membership. As we grow old it is a pleasure to look back and feel that we have done our share in this direction. It is the duty of the young man, and it should be his pleasure, to recognize the work and the standing of the older men. There is mutual duty in this regard, and it can only hold when it is properly brought to a successful issue.

During the past year this Society has had to appear before the Legislature on several different occasions to further the interests of dental legislation. A committee was appointed last year to take charge of dental legislation. I wish to speak in a plain, unvarnished way to-day, and I do not wish to hurt any one's feelings, but I am convinced that the legislation committee failed to do its work. We had several meetings to further the interests of dental legislation. We had a committee appointed which should have appeared before the Legislature and advanced the interests of this Society, yet when the time came men who were not on that committee, men even who were members of the State Board of Registration of Dentistry, had to appear to further the increase of their own salary. To say the least, it was not courteous, it was not dignified. And the time has arrived when this State Society should see that a small, active, and capable committee is appointed each year to attend to legislative matters. I should recommend that the number of the committee be not over three; that it be made up of experienced, capable men, men who are able to go before the Legislature, to attend committee hearings, and make the wants of this Society known. They certainly should be men of standing and men of reputation. The greatest need of the future is going to come along the lines of legislation. Each year you are sure to see some bills presented that need thorough investigation.

During the last year there was a bill presented to merge the boards of pharmacy, dentistry, and medicine into one board, to be known as the Board of Health. That measure deserved defeat, and it is a pleasure for me to say that we were able to go before the Legislature and defeat that bill in the committee hearing.

There was another bill which was presented from this Society asking for an increase of the salaries of three of the members of the State Board of Registration, so as to put the salary of the members of our board on a par, or an equality, with those of the members of the Boards of Medicine and Pharmacy, and we are pleased

to state the bill passed unanimously and was signed by the governor. An amendment to the law was presented last year whereby it was more thoroughly explained how a physician could practise dentistry, and which bound a physician to the observance of certain regulations when called upon for dental services. That amendment was necessary, because if we had proceeded to prosecute under the law as it existed prior thereto we would have been beaten, but the act will now stand the test of law.

There was a bill presented last year to authorize students to practise under the tuition or supervision of registered dentists. The bill was to have been called up at the last session of the Legislature, but was not, and will therefore die a natural death this year.

I come now to the subject of prosecution. Dr. Faxen, of this Society, spent a good deal of time and thought in putting forth the prosecution committee. It was a grand thought on his part, and it was hoped it would be productive of good results, but we are sorry to say that up to the present time that committee has accomplished practically nothing. The time is ripe and action should be taken during the present year whereby we can have State supervision by the police of the illegal practitioners of dentistry. Dr. Dowsley, the president of our board, has a promise from our present governor that during the coming year he will assist this board in all its work by allowing it the use of the State police. In case that should come to an issue, and the governor should not fulfil that promise, we shall take means to further our end through another channel.

This Society has now arrived at a stage in its growth where two days are not long enough for its sessions. We should have at least three days. It is not fair to the gentlemen who read papers that there is not time for their discussion, and this matter should certainly be taken into consideration at the present meeting, and means taken to extend our annual meetings from two to three days. One of the greatest misfortunes of the profession in a dental society to-day is the lack of thorough discussion of papers; the discussion of a paper is frequently of more value than the paper itself, and by having a three days' session that difficulty will be overcome to a great extent.

The Society has at times been divided on the question of exhibits, but if any gentleman who has been arrayed against exhibitors will step out into the corridor and observe our present exhibit

it is safe to say that he will come back converted, for I can truthfully say that the exhibits we have here at the present time are the best exhibits that the Massachusetts Dental Society has ever seen. There is a feeling among the city dentists that exhibits are not necessary. I frequently think that dentists living in the city of Boston, where they have access to the large dental depots and can step in at a moment's notice and secure anything they require, do not appreciate their facilities; it is the country doctor who comes perhaps once a year to our meetings and observes our exhibits who can fully appreciate them, and it behooves us to foster the interests of the country dentists as well as those of our city dentists.

We have had during the year three deaths in this Society, that of Dr. Edward S. Powers, of the Southeastern District, of Dr. J. Searle Hurlbut, of the Valley District, and Dr. Isaac J. Wetherbee, of the Metropolitan District. Dr. Wetherbee was on the honorary list; Dr. Hurlbut was an ex-president,—I believe he was president in 1874. Both of these gentlemen obtained prominence in their profession and did a great deal of work to further the interests of this Society.

The financial condition of this Society at the present time can truthfully be said to be the best in its existence. The treasurer has not on his books any individual who is in arrears more than one year's dues. During the past year various delinquent district societies have paid their bills.

It is a sad thing in a dental society to have much dead wood, commonly called non-paying members, and it behooves this society to cut it off as quickly as possible. If you have members who cannot afford to pay their dues, put them on the corresponding list, but when you have men who can afford to pay, who are good fellows, and who do not pay their way because they will not, you had better cut them off the first year they get in arrears.

There has been a long list of presidents of this Society, and many of our ex-presidents are living to-day. If a man has been honored with the presidency of this organization he certainly owes it to the Society to further its interests after he has left the presidency. When you find in this State organization men who have been honored as presidents who go out and deride the organization, and not only do that but fail to keep up the membership, there is something wrong. That something wrong is not in the Society, it is in the member. The time is ripe to call to account

some of our ex-presidents. Some of them have never done a stroke of work for the Society after they have been so honored, and some have even failed to keep up their membership. The stigma attached to a man who has been honored by the presidency and fails to honor the Society afterwards is beyond mention. We should take recognition of these things and point them out in no uncertain manner, so that these men can be called to account.

It is well in electing a president to select one who started at the lower rounds of the ladder; a man who has so started is certainly a stronger man when he reaches the top. He has worked his way. He knows what it means to progress, and is a man who will further the best interests of the Society; and if there could be an unwritten law in the Society that none but those who have worked in the subordinate positions in a thorough manner could gain the presidency it would be of great advantage.

There is a clause in our constitution which fixes the place of meeting as Boston. Now, Boston is a great city. It is commonly called the "Hub," but in order to use a hub we must have spokes, and I think the time is ripe to change that clause in our constitution. It may be wise in the future to have the majority of the meetings in Boston, but we should have the privilege of holding them elsewhere. We have many members outside of Boston, and they should be considered in this respect.

We have a constitution which sadly needs revision; to a great extent it is obsolete.

The Metropolitan District has had many meetings during the last year and a large attendance. The Metropolitan District is in a situation which can easily produce a successful district meeting; it has grown in its membership; its dues are promptly paid; we have no criticism whatever of the Metropolitan District.

The Southeastern District has come forward in a grand manner during the last year. If I remember correctly, it has elected twenty-three members, and that means individual work. The secretary and the treasurer and the executive committee of the Southeastern District certainly did their duty during the past year.

The Central District is still the same old Central District. The city of Worcester alone has eighty registered dentists,—somewhere between eighty and ninety,—and the total membership in that district at present is some thirty-odd members. It is safe to say there are three hundred dentists practising in the county which

is taken in by that district, and something should be done to stimulate the work in that region.

The Valley District Dental Society needs no word of praise from me. Its work speaks for itself throughout its entire career, and at the present time in the Valley District ninety-eight per cent. of the ethical men are members of the Society.

The Western District has come to life once more, and we hope it is going to stay there this time. During the last few weeks there was a good deal of discussion in that place as to whether the Western District should disband and become a society to be known as the Berkshire District, or retain its membership in the State Society. After a long debate, participated in by men who have been honored by this State Society, it was unanimously voted to try once more to keep up the membership in our State Society. It is rather a sad thing to find a man who has been honored by the presidency of this organization getting up in a public meeting of dentists and favor leaving the parent organization to form an independent society, and yet that is what occurred in the Western District, but through the efforts of Dr. McLaughlin and Dr. Flynn that district is once more on its feet, and the coming year will tell whether it is on its true feet or not.

No district organization can exist without, first, a thorough secretary, second, a thorough treasurer, and, above all, a very thorough executive committee. When you get those things complete you will have a district society, but not until you do. It is about time the district societies removed from office some of the dead timber which is to be found among their officers. It is a sad thing when men year after year fail to send in a report to our secretary. Such men should never be allowed to remain in office, but should be removed.

We hear at the present time a great deal of the strenuous life. We hear a great deal of the prosperity of dentistry at the present time. Evolution is going on in dentistry as in the world at large, and dentistry is partaking of the prosperity the same as other things. At the present time, if anything is required to be brought to a higher standard, it is that which is covered by the old New England term "manhood." When our district society, our State Society, and national organization attain to that prominence wherein manhood is first considered we will have our organizations very near perfection. The greatest need to-day in this organization, the

greatest need in the world at large, is that good old principle known as manhood.

Let this Society further its interests and advancement by remembering these things and taking into consideration that the advancement of the organization can only come by the cultivation of principles which go to make up honest and true manhood.

Dr. Boardman (in the chair).—I can heartily commend the address of the president in every respect. I know something about that of which he has spoken. The address is now before you for discussion or reference. What is your pleasure?

Dr. Maxfield.—I desire to make a motion, but I want to do it with the understanding that I shall not be appointed on the committee. I do not think it exactly fair to a presiding officer, when he makes his annual address in this way and makes so many recommendations, that no particular notice should be taken of it. The president has made some excellent suggestions and something should be done in regard to it. I move that a committee of three be appointed to go over these recommendations and make a report to this meeting before the adjournment, but I make the motion with the understanding that I am not to be on that committee.

The motion was regularly seconded and unanimously carried.

The following committee was appointed by the chair pursuant to the above motion: Drs. L. D. Shepard, George A. Maxfield, and John W. Bailey.

Dr. L. D. Shepard.—It seems to me the committee should have more time to consider the President's Address; there is very much in it, and it seems to me the committee could hardly consider all the recommendations and make a report at this meeting.

Dr. Maxfield.—I think Dr. Shepard has made an excellent point, and I move that this committee have six months within which to report, and that their report then be sent to each district society.

The motion was regularly seconded and unanimously carried.

President Flanagan resumed the chair.

The President.—At the National Dental Association meeting at Niagara last year there was presented a paper of great worth and interest, entitled "A Bird's-Eye View of Pathology and Therapeutics," by a gentleman who is associated with a college in the city of Nashville, Tenn., and one who is well able to come before this organization to-day and read an interesting paper. I have great

pleasure in introducing to you D. Rankin Stubblefield, A.M., M.D., D.D.S., of Nashville, Tenn.

Dr. Stubblefield.—Mr. President and gentlemen of the association, it would be an injustice to my feelings to say that I fail to appreciate the compliment and the pleasure of being with you. I have in all my professional years known of this contingent of the professional body; in fact, we of the West or Middle West look, as it were, to the rising sun for inspiration, for tradition, for all that is known or to be known.

Dr. Stubblefield then read a paper entitled "Sanitalogy: A Discussion of the Health Principle."

(For Dr. Stubblefield's paper, see page 769.)

The President.—We expected Dr. Andrews to open the discussion, and in his absence I will ask the secretary to read a letter received from him.

"1044 MASSACHUSETTS AVENUE,
CAMBRIDGE, MASS.

"MY DEAR DR. BOARDMAN,—I regret very much that I shall not be able to be at the meeting to discuss that paper. It is an excellent paper, and I agree with what he says. I could only express my pleasure. I am going to try and get it on Thursday.

"Very truly yours,

"R. R. ANDREWS.

"June 1, 1903."

The President.—In the absence of Dr. Hopkins I will ask Dr. Stockwell to open the discussion. (Dr. Stockwell did not respond.)

Dr. Shepard.—I have listened with great pleasure to the paper and paid very close attention to it, and have been very much interested in it. I hardly feel competent to discuss it in the way which it merits. In connection with the investigations of Dr. Black and others, there have been statements made that will hardly harmonize with the experience of years of practice. When we are told that there is no difference in teeth in their resistive qualities, we have to say that in our experience it has not been so. When we are told by the investigators that teeth do not change in their composition from the time they are erupted until old age, we feel that science does not speak the entire truth. We know from clinical experience that teeth do change internally from youth to old age, whatever scientific investigation may affirm. Every practitioner of experience has adopted a method of practice based upon his faith and in opposition to these statements. Who to-day would presume

to treat diseased teeth of a child of twelve or fifteen as they would the same teeth at forty? And why? The teeth are not the same in composition. I need not enlarge on that; you all know what I mean.

What is the excuse for the myriad of dressing fillings, if you will call them so, as some have, which are inserted in the time of adolescence, if the teeth have the same resisting power to attack as they have later?

I have, as the result of experience, more faith in this principle which we have listened to of the inherent tendency implanted in our organization tending to health and recuperation.

Dr. C. F. Stockwell (Springfield, Mass.).—When the president called upon me a moment ago I hesitated to speak because of two facts,—first, I was not able, on account of my infirmity, to hear it all; and further, because it seems to me this is one of those papers which, in order to discuss intelligently, one needs to have—well, a good Sunday afternoon out of doors to study it and think about it in its various aspects.

In so far as I was able to catch the drift of the paper, I certainly do agree with everything the essayist said. Furthermore, as he read his paper I could scarcely help feeling that this paper, with some others we have heard recently, marks an epoch in dental science. It is an indication of what I believe to be, in effect, the turning of the tide which has been so prominent in the last six or eight years, in the trend of which Dr. Black and others, as Dr. Shepard has said, have been the chief leaders.

Again, several times during the reading of the paper a scientific axiom came to my mind, which, in short, is that every individual is the product of three principles, if we may divide these principles by strict and definite lines; they are substantially one, but with three different aspects; that is, every individual is the product, first, of heredity, second, of environment, and third, of an innate tendency to differentiate. Some years ago it was generally held that the most dominant of these was heredity, and that what man, or any born of organic life, might be as an individual was due to a larger extent to heredity than to either of the other two principles; later on the emphasis came to be applied to the second of the trio, that of environment. . . .

At the present time, however, if I understand the drift of scientific thought, the emphasis, by the most penetrating minds, the

most advanced minds in the scientific world, is beginning to be placed on the third principle,—the innate tendency to differentiate. This is, practically, the same principle which the essayist has dwelt upon and emphasizes so strongly and ably; it is what he called the “health principle,” which, if I were to name it myself, I should perhaps call the life principle or the principle of life. It seems to me that he is in accord with the present most advanced biological, physical, or chemico-physical views of the scientific world as I understand them. These views, at least, it seems to me, greatly strengthen the essayist’s argument.

Many of our best biologists and physiologists the world over hold to-day that life or the life principle precedes organism; that, in fact, it builds its own structure or body. If that is true, if life principle precedes organism, why, of course, it is the principal fact for us to deal with in medical science and dental science as well; and we might go further and say we must not forget that principle in even social science, to say nothing of philosophy in general.

I believe the essayist is right, and, as I said before, I believe this paper will mark an epoch. There is reaction against the idea that environment is the one all-essential principle, or that heredity tells the whole story. We must recognize the fact that Life—the health principle, as the doctor calls it—is the essential factor, the bottom fact underlying all other facts.

If I could have, as I said a moment ago, a day with the paper quietly by myself, I am satisfied I should find many things in it I would like to talk about; but I hesitate about saying all that might be said now and here. In any event, we owe the doctor a large debt of gratitude for coming so far, and for giving us a paper so interesting and suggestive.

Dr. Stubblefield (closing the discussion).—I thank you, Mr. President and gentlemen, for the tolerance which you have exhibited, the patience, that virtue which is so to be commended.

I realize that it was handling explosives, and certainly hot things, to take a subject that seemed to be so foreign to our specialty and to stay so long on it. I did flatter myself that I had started something that would at least not be misunderstood, and the very first man who opened the discussion showed that he had misunderstood. But he, after a while, came around and admitted that I was not as bad as I looked; therefore I congratulate myself. “All’s well that ends well.”

It is not necessary for me to bring up all that he said, but it was a clear misunderstanding. I did not say and I do not intend to say, and I do not want to be put on record falsely,—although I am a very great believer in standing like a man for my convictions,—that I said or meant to say that there was no change in the structure of the tooth from youth to manhood, that those changes in the teeth do not go on. No. What I said, brought into plain, every-day, common-sense language, was, that there was a principle that had not been fully recognized. We have been standing on the outside of the organism punching at it, and we did not, at least consciously and intelligently, recognize there was something inside of the man that had a power of individualizing. Dr. Stockwell has very properly paraphrased it as the effort of the organism to make itself—to make its own environment, so to speak.

I thank you very much for having permitted me to read such a long paper. I wish you would regard it as something that can be looked upon as an every-day, common-sense thing, and as talking about something that we have demonstrated. I don't care what you call it, but it is like the practice of medicine. I think we are overawed too much, that the doctor has assumed that he must puff himself up, take his gold-headed cane and his high hat, and walk over us. The doctor, after all, is nothing but a man, an educated man, to be sure, but he has his limitations, as any other man, and we can get close to him and get the good out of him as from any other man. So with this subject. This is an effort to take a common-sense, every-day, homely view of or hold upon a principle that possibly has never been thoroughly recognized. I do not think, if there had been a doctor here, while he might have bristled in the beginning, that he would have objected in the end to what I said. He knows there is a common-sense view of the practice of medicine, and that the world at large does not recognize it. It is the common-sense view of a principle underlying teeth and every other part of the living organism that I was trying to slip into you, in a dental association, and then make my apologies afterwards.

I am very much indebted to you.

The President.—Some years ago there came to the city of Springfield a dentist to do some porcelain work, and there gathered around his chair at that time, as he inserted a porcelain filling in the mouth of my assistant, several dentists, and for the last two years every time that young man goes into the office of these awe-

inspired dentists he is invited into the chair and they take an excavator and start to pull out half the lateral tooth, wherein is inserted an excellent porcelain filling put in by Dr. Patten, and up to the present time they have not been able to pull that filling out. I have great pleasure in introducing to you Dr. Charles C. Patten as the next essayist.

Dr. Patten then read a paper entitled "The Porcelain Art in Dentistry."

(For Dr. Patten's paper, see page 825.)

The President.—The next paper is one by Dr. James Ross, of Fitchburg, entitled "Porcelain: A Fad or a Fact."

(For Dr. Ross's paper, see page 847.)

DISCUSSION.

Robert T. Moffat, D.M.D., Boston.—The title of Dr. Patten's paper led me to think that he would mention something besides porcelain fillings, and I expected to bring up one or two points with reference thereto, but I find that he has limited his paper to porcelain fillings, and therefore I shall not have very much to say.

Among the various difficulties which we have in porcelain Dr. Patten did not mention the question of lights and shadows, which is one of the many difficulties which beset the worker in porcelain and which should be well considered. I am sorry there is not a black-board here, so that I might make my meaning clearer in reference to that special point. It goes without saying that in restoring the contour of a tooth with a porcelain filling such contour should be restored exactly. Taking a central incisor with an approximal cavity occupying about one-third of the area of the visible surface, if the labial contour of the filling is not exactly continuous with the labial surface of the remaining tooth you will get a different appearance at different points of view. In other words, if you stand directly in front of such a tooth it may probably look all right, but on moving to one side or the other it may appear darker or lighter according to the direction from which the light strikes and reflects. In inlays particularly the question of shadow changes a great deal with the depth of the filling. In a shallow filling the cement will show through, and if the inlay is only a little deeper than the natural enamel of the tooth you will get considerable apparent change in color when the filling is set

with cement. An allowance should be made for that in matching the porcelain, and it should be made about a shade or half a shade lighter than it is expected to be when set.

The question of the color of the cement used in setting the inlay or filling affecting the ultimate shade is worth considering. Ordinarily I use the white Harvard cement; there doubtless are others just as good, but this is what I use, and find it answers every purpose excepting in a yellowish tooth, in which case I use what is known as No. 3 color, or yellowish white.

Some dentists say that these fillings are not practical. These men have perhaps had little or no experience with them and do not care to go on with the work, it taking too much time and they feeling it does not pay them from that point of view. I advise you all not to be one of these. Porcelain has its uses and should be utilized, not everywhere, but in proper cases. The fees should be made commensurate with the amount of skill required in the work. No man should say it does not pay, provided he can properly do it. When one starts on porcelain work, if he starts with a small filling he naturally works up to the larger and more difficult ones, especially the approximal cavities, which I think are the hardest to do. But they need not finish there; when they have gotten to a stage where they can make all kinds of porcelain fillings they have not reached the limit of the capabilities of porcelain. Crowns can be carved from porcelain, but not with the same preparations used for filling. Porcelain for carved teeth and crowns is a different material. Crowns may be made from these so-called porcelain enamels, but they are not very strong unless made under pressure,—that is, in a mould. The porcelain used for a carved crown is different, but it is nothing new. I expected to discuss this subject, but Dr. Patten did not mention it in his paper.

With regard to the appearance of porcelain as compared with gold in the mouths of professional people, such as actresses and public speakers, it has been my lot to have a few such as my patients. I recall particularly the case of a young woman who had rather good-looking teeth and very good gold fillings in the front teeth, but they were very conspicuous when she was on the stage, and from certain parts of the auditorium they looked black; they were very good fillings, but they looked like holes in her teeth, as she expressed it to me, and I found all that difficulty was removed by the use of porcelain fillings. It was a matter of dollars and cents

to her, and made quite a difference in her engagements. The same thing occurred with an actor who had some gold caps on his teeth, which were removed and replaced by porcelain, which made a great improvement.

A patient sometimes, after having had two or three porcelain fillings in visible cavities, likes them so well as to want them everywhere. That is something you must guard against, and the patient must be given to understand that they are not suitable for every case.

It is surprising to see how much longer porcelain fillings will wear than some other fillings in the same mouth. I recall particularly an elderly patient who could not stand much work being done on her teeth at one time, and it was necessary to use much cement and gutta-percha. In September, 1895, I put a porcelain filling in this woman's mouth, and she is using it yet, while in the adjoining tooth she had had a gutta-percha filling replaced at least four times, and I do not know but more, in that length of time, showing the difference in the wear of different fillings in the same mouth. There has been no washing out of the cement and no change so far as I am able to observe in the condition of the porcelain.

Dr. Ross stated that porcelain has come to stay, and I certainly think it has. It is looked upon by many, especially by the younger practitioners, as a comparatively new filling, but it is not. In 1897 Dr. Jenkins showed the porcelains in this country, and since then there has been a great reawakening of interest concerning them, but they are certainly a great deal older than that. I have records of fillings that were put in by Dr. A. H. Parker, of Boston, and also some by my father away back in the early eighties, and I know that some of those fillings are present to-day in the patient's teeth, and have never come out. I saw a porcelain filling within a month which has been in just thirteen years; it was put in by Dr. Chamberlain, of Rome; it was not made in the manner in which we make them to-day with a matrix, but from a piece of porcelain taken from a porcelain crown, which was chipped off and ground to fit the cavity fairly well. We would not consider it a good fit to-day, but in that day it was good enough, and that was on the cutting edge of an upper right cuspid, where it was subjected to a great deal of wear, and it has never been out during all that time. That shows they will stand for thirteen years at least.

Dr. Ross spoke of not using a dam on account of the change of color. That is a point worth considering. When you come to set the filling, if you show the patient the filling before drying the tooth and setting it, the patient will be quite pleased with the result, but when you have dried your tooth preparatory to setting it there will be a decided change, and that is very apt to be disappointing. If the color is properly treated in the beginning, that is, made a little lighter than the tooth in question so as to make allowance for the cement, that color will change within two or three days, so that it will be greatly improved, and if the patient is discouraged in the outset you can hold out the comfort that it will look better in the future.

The question of stained joints comes up sometimes, and I think there is but one reason for the cause of that. In these modern low-fusing bodies, if you do not take the greatest care in getting a perfectly smooth and polished edge for the filling, you will get that discoloration owing to the little saw-like edge on the filling, which will catch and hold dirt. I have noticed that where the fillings have been absolutely smooth there has not been such trouble.

The porcelain fillings of the present modern material should be etched with hydrofluoric acid on the cavity side previous to setting, and unless that is done the filling will be likely to come out sooner or later. These modern porcelains are practically a solution of silex in glass, and unless the glass is roughened the cement will not get a strong and firm hold.

Walter I. Brigham, D.D.S., South Framingham.—For the last two years it seems as if no convention would be complete if it did not have one or more papers or demonstrations on porcelain inlay. Many men have given us the benefit of their time and experience in demonstrating the work, and Dr. Ross and Dr. Patten have always been very liberal in giving us their time and explaining their methods.

There is no use denying that porcelain has come to stay and that it does fill a place in dentistry which nothing else has ever done; but if a man tries to use it everywhere and anywhere before he fully understands its use, he will have any number of failures. Many men come here and talk of their successes, but few of them speak of their failures. I have put in a great many porcelain fillings, many of which are giving good service to-day, but I have

had some come out. That, however, was no fault of the porcelain, but rather my lack of ability or failure of observation in doing the work.

Some men, especially Dr. Reeves, of Chicago, advise the use of porcelain without any undercutting, practically without any cavity, and sticking them on to the side of the tooth. He may be able to do it, but I cannot. I do not put in any inlays now unless they enter the tooth quite a distance, so as to have proper retention, and if it is possible all inlays that I put in will only enter the cavity from one surface, from one way, and, in order to be dislodged, would have to come out that way.

Some men look at the use of porcelain in a peculiar manner; that is, they look at it with distrust and very much with the feeling that they really hope it will not succeed. They like to see a man have his failures. I cannot attribute this to anything other than the fact that perhaps they are not willing to try and do the work that is necessary to perfect one's self in its use. But we who graduated long ago must work along with porcelain and acquire skill. If we do not, lo! we will be a back number, for the student who graduates to-day is going to know something about porcelain, and he will surely use it.

Dentists are looking for things that are easy to do. Only a few years ago archite cement came into use; it was to be a universal filling, and every dentist in the Union, nearly, bought a package, and yet you could hardly induce some men to attempt to use porcelain, which is as far ahead of archite cement as one could imagine.

If you will find out the cause of your failures and eliminate that factor, you will soon gain ground and the failures you once had will all pass away.

The realm of usefulness of this material is almost unlimited in the hands of some, while with others its limits may be much circumscribed. But it is only by knowing its usefulness and your own ability to use it and then by constantly extending them that you can get the best results.

I do not think that the difference in the kinds of porcelain amounts to very much. All of those in use to-day are good. Some men claim that with one you cannot do what you can with another. A dentist told me that with the Jenkins body I could not do a certain thing, that it was an impossibility; I told him I thought

I could, and I tried it and did it, as any man could if he would use the care necessary and become familiar with the peculiarities of that certain porcelain.

It is hard to speak much of the preparation of cavities for the reception of porcelain fillings, but to my mind here lies the fundamental principle of success. As I said before, I now make no porcelain fillings that do not enter the teeth for quite a distance, and if it is possible I have the walls as nearly parallel as can be; then, with undercuts, I get quite a strong hold, and in some cases have them practically lock themselves in.

Dr. Patten spoke of the use of platinum with the Jenkins body. I do not doubt that Dr. Patten has had excellent success with that, but I never had; I can do far better with the Jenkins body with gold than I can with platinum. The time of investment is *nil* compared with the rapidity with which you can work and the assurance of success. With the gold for a matrix, and invested, I am sure my result is going to be just as I expected, but my experience with platinum has been that the Jenkins body, although a low-fusing body, adheres more strongly to platinum than any of the other bodies, and as it shrinks it has a tendency to draw the platinum out of shape, especially if it is a large inlay such as is used for a bicuspid or a molar; with the smaller inlays you may not have that trouble.

Speaking of its use in bicuspids or molars, I think those are ideal places for this filling; you can build up on the approximal cavities extremely well. I have seen several bicuspid fillings which took in the coronal, mesial, and distal surfaces, where there was but little on the buccal and palatal walls standing, and with the porcelain in there the tooth was restored to its normal contour and the gum covered it nearly one-eighth of an inch.

In children's teeth we use cement for certain reasons, and in these cases to my mind a porcelain filling is an ideal filling, because you can get the benefit of the cement next to the tooth-substance, and you can get the durability of the porcelain; in the majority of cavities the filling is such that you can put in a porcelain filling that will last for a good many years.

One hardly knows what to call a success in a porcelain filling; if it should fail after several years, it is to my mind a success, as all things that we as dentists do are liable to fail, and in aged people it does fill the place perfectly. What can you do with

incisors or cuspids? You may put in a gold filling, but it would be a large one and far above the enamel line, at the cervical wall, but you can restore them with porcelain with a great deal of success.

There will always be just the same difficulty in different men's inlay work as there is in different men's metal fillings of gold or amalgam. There will be some men who will put in inlays that will work beautifully and give no trouble and last for years and years, while other men will have failures.

The preserving qualities of porcelain are unequalled, and that is due in a great measure to the cement, in the conditions in which it is used. I have great faith in the antiseptic qualities of the cement as it is closely held under the inlay. A cement filling has antiseptic qualities which are soon lost in an open filling in the mouth, but which are retained for a long time under a porcelain inlay, for no matter if that does wash out in the joints you will never see decay. Either bacteria will not live against the porcelain, or else there are antiseptic qualities in the cement which prevent decay.

There is one thing against porcelain to us as dentists, and that is that the filling is an entirety, and when it comes out it comes out as a whole, and the patient is very likely to feel that it is our fault. If you put in a gold filling which has remained in for three or four years and then decay commenced around it, the patient would not question it, but if the filling comes out intact the patient questions the value of it.

I was very much pleased with Dr. Ross's paper and with all he said concerning a dentist as a useful man,—his usefulness and his willingness in a way to be a philanthropist; that is, to do the best he can under all circumstances; and if a man can use porcelain and thus be of greater service to his patient, then it is porcelain he should use. But the dentist should strive in every way, as every other man should, to do the very best he can. It is only by serving your patient well that you can succeed in your profession.

There seems to be a great difficulty in gauging the color in some teeth, but it seems that the most normal colors are the easiest to match, the hard ones seem to be the abnormal ones.

The kinds of cavities in which porcelain can be used seem to be almost unlimited; I use it a great deal in building up molars

and bicuspid instead of using gold caps; I do not think I put on ten gold caps in a year, and my hands are never idle.

We will sometimes have trouble in the shading of the porcelain, but to my mind a great deal of that is due to the translucency of the porcelain, and people have tried to get a translucent porcelain, which they should not have; they should have an opaque body with a glassy surface, which gives them a translucent surface and then the cements do not change the color much; that is overcome to a great extent by using the modified bodies beneath and coming to the surface with the lighter ones; you then get more of an opaque body and a substance which the cements will not change the color of.

PROCEEDINGS AT THE BANQUET HELD AT THE HOTEL LENOX,
WEDNESDAY, JUNE 3.

President Flanagan.—I thought, as I heard a few moments ago the quartette singing "Weep no more, my lady," they were going to say that they would weep no more for the toast-master, and I was glad to hear they were weeping for some one else. (Laughter.)

In this Society there is a committee known as the Committee on Banquet and Entertainment. That committee has had a great service to perform in the last few years for this Society. I believe last year the committee was made up of identically the same members as it is this year, and on it are Drs. J. F. Dowsley, George C. Mitchell, T. J. Barrett, and Eugene H. Smith; and as I sat here this evening I thought why is it they desert me? Last year they spread themselves around the head of this table surrounding their toast-master to brace him up and give him all the encouragement possible, and here to-night the only man I find true to the last is my good friend Dr. E. H. Smith; the rest have deserted me.

Coming here to this the thirty-ninth annual meeting of our good Massachusetts Society, I wish to extend, in behalf of this Society, a cordial greeting, a greeting that comes from the heart and a greeting that may continue year after year until our good Massachusetts Society has attained that zenith which we are all striving for,—perfection.

In our society there is much that is serious, and for once it is well for us dentists to gather around the festive board and come down to the more social and the better part of life, and on behalf

of the members I extend, especially to the ladies, our greetings and our thanks for their attendance here to-night.

My thoughts stray to a city not more than a few hundred miles away which has always been foremost in many educational events, and which to us practitioners of dentistry appeals more closely because of its associations. I can remember my two years spent in that beautiful city, when such men as Garretson, White, old Dr. McQuillan were there, and where there are at present such men as Dr. Kirk and our good friend who graced this board last year, Dr. Truman; and I am proud to say that we have here to-night, to well represent that city in all its best interests from the stand-point of dentistry, that noble gentleman who graces the chair of Operative Dentistry and Dental Histology in the University of Pennsylvania, Professor Edwin T. Darby.

DENTISTRY.

Edwin T. Darby, M.D., D.D.S.—MR. TOAST-MASTER, LADIES, AND COMRADES IN DENTAL SERVICE,—When I received a very courteous invitation to be present with you to-night I felt that I could not accept it, and yet I had not the courage to decline. We were in the midst of our examinations at home, and I knew that if I accepted this invitation I must do my work before leaving or I could not come. But a similar invitation had been extended to me so frequently in the past that I felt I should be ungrateful and might be considered discourteous if I did not accept this time. Besides that, I had a desire to meet the gentlemen of the Massachusetts Dental Society. I have known a few of you for many years, and I have known some of you for a less number of years, but I have known of your worth for a long time.

The men of New England have always impressed me as self-respecting men. There is a good deal in that word "self-respecting." I remember when I was quite a lad I went to Philadelphia to study dentistry. I went into a boarding-house, and there sat at the table with me a dear old Quakeress; she turned to me one day and said, "Thou art from New England, art thou not?" and I said, "Not exactly, madam; why do you ask the question?" She said, "Thy speech betrays thee." (Applause.) I went into the college, and the students called me a Yankee. But I said, "No, I am not a Yankee, I came from New York State, but I come of a Yankee ancestry; my parents came from New England." The

nearest approach I can come to a Yankee or a New Englander at the present time is that I am a member of the New England Society of Pennsylvania, and am proud to be a member of that body. (Applause.)

I observe that you have me announced to-night to speak upon the subject of Dentistry. Some one has said that in order to make a good after-dinner speech the speaker ought to know absolutely nothing about his subject, or else he should know everything about it. I have sometimes heard after-dinner speeches (and you may hear one to-night) where I thought the speaker knew absolutely nothing about the subject, and I have heard other speakers who ought to know everything about the subject make perfect failures.

Pardon me if I digress just a little. Fifteen years ago I moved out into the country five miles from Philadelphia, thinking perhaps it would be better for my health and that of my children. I found that I had located in a community of Friends, the Society of Friends, or Quakers,—excellent people they are too, and I have found them so after fifteen years. I had not been long among them before they worked me into service. I do not know just why they did it, but they made me president of the Building Association. They made me president of the Country Club. They made me president of the Sewer Corporation. They made me a director in the bank. They made me president of the Council, and they then made me chief burgess of the borough, which position I hold at the present time. But that is not all they did. They were going to work me still more, and they asked me to lecture. In some way they found I had been in the far East, in the Orient, and they asked me if I would not deliver a lecture on that subject. You know these Friends, these Quakers, are always on the lookout for every bit of information they can get. Then they asked me if I would not deliver a lecture on Egypt. It was some years since I had visited Egypt, and it made me some work, but I said, "Yes," and gave the best I could as a lecture on Egypt. Then they learned I had visited Yellowstone Park, and asked me if I would not deliver a lecture on the Yellowstone Park, and I said, "Yes," and prepared a lecture on that subject. Then the next year they came to me and said, "We want you to give a lecture on Temperance." (Laughter.) I said to the chairman of the committee, "Now, I am not the man to lecture on temperance, because I am just a little bit of a tippler; I occasionally take a glass of wine if I want it,

and I think a man to lecture on temperance ought either to be a total abstainer or a confirmed drunkard." (Laughter.) I said, "Let me tell you a story, my dear fellow, and it will illustrate just what I mean. A few years ago there was to be a very important trial in the courts involving a good deal of money. Two men were subpoenaed to testify on behalf of one of the parties to this suit. These gentlemen were both of the name of Wood (mark the name, —Wood). They were both elderly gentlemen; in fact, they were very old, but well preserved. The first brother went on the stand and gave his testimony in a very clear, concise, comprehensive, and satisfactory manner. When he was about leaving the stand the judge said to him, 'Mr. Wood, I have been very much interested in your testimony, and I feel impelled to ask a few questions. You seem to be a man well along in years; would you mind telling me your age?' He said, 'I am ninety-one years old, sir.' The judge said, 'Well, you must have had wonderfully good habits to be so well preserved after all these years; have you ever been in the habit of using tobacco?' 'Never touched it in my life.' 'Have you been in the habit of taking intoxicating liquors?' 'Never tasted it in my life.' 'Have you kept good hours?' 'I have been going to bed about eight o'clock at night for the last thirty or forty years.' And then the judge turned to the members of the court and said, 'You see the importance of living a good, temperate, and orderly life. I am very much obliged to you, Mr. Wood, for the information you have given.' The witness took his seat and the other brother went to the stand and gave testimony as clear, concise, and satisfactory as his brother had done. When he was through the judge said to him, 'I beg your pardon, sir, but you are a brother of the gentleman who has just testified?' He said, 'I am.' The judge said, 'Will you tell me your age?' He replied, 'I am ninety-three years old, two years older than my brother.' 'Would you mind telling me what your habits have been? I suppose they have been like your brother's, or you would not have outlived him and been so well preserved?' 'On the contrary,' he replied, 'I have not been to bed sober in fifty years; I have used tobacco in every form since I was a child; and as to going to bed, I have not retired until twelve or one o'clock in thirty years.' (Laughter.) 'Well,' said the judge, 'I have always heard that Wood to be good must be either very wet or very dry.'" (Loud laughter.)

Now you see, ladies and gentlemen, what I mean by saying that in order to make an after-dinner speaker one must either be very ignorant of the subject on which he is about to speak or very well informed.

The supposition would be that I ought to know something about dentistry, but I declare I am a little at a loss to know just what you want me to say about dentistry. If you want me to say, as some men have said, that I am ashamed of dentistry, I am not the man to say it, because I have always been proud of my profession. I have always been ready to extol my calling, and when I see a man who is ashamed of his profession I feel ashamed of him, and I do not think we have any occasion to be ashamed of dentistry. When I recall the founders of American dentistry I find they were gentlemen who ranked equal with any and all professions fifty, sixty, or seventy years ago. When I recall such men as Horace H. Hayden, Chapin A. Harris, Edward Hudson, Eleazer and Jehiel Parmley, Solyman Brown, Amos Wescott, John Reed, John Allen, and a hundred men that you could recall, or that I might if time permitted mention, I am not ashamed of the founders of American dentistry. (Applause.) Has any profession within our knowledge made such strides during the past fifty years? Has any profession made such strides during the past twenty, or even the past ten years, as the dental profession? Is there any profession in which the work is more positive, more demonstrable, than in ours? Look, for instance, at the changes which have been made and the improvements that have occurred within the past forty years. I can recollect when there were but three dental schools in America; to-day there are fifty-eight. I can recollect when the curriculum of dental colleges was two years of four months each year. What is it to-day? A course prolonged to three years, and now about to be extended to four years, equal to that of medicine in our best schools. If the medical profession spends but four years acquiring knowledge to practise all of the specialties of medicine, and yet we are to devote four years to the study of a single branch of the healing art, then the dental profession has made a greater advance, perhaps, than any other.

Then what about our service to the community? When you take the aggregate of human suffering that is every year prevented, when you take into consideration the pain that would have been suffered from exposed pulps had you not arrested the decay before

it reached that pulp, when you take into consideration the comfort that you have given the community in preserving their teeth during life, when you take into consideration the comfort and health of the patients you have benefited by the restoration with artificial dentures of the organs which have been lost, can you be ashamed of the work that you are honestly doing and of the profession which you represent?

I say, as I said a few moments ago, I am proud of dentistry and of the wonderful progress which has been made in the dental profession. (Applause.)

Furthermore, I think the community at large is appreciative of the services which it receives at our hands. It has sometimes been said that the dental profession does not take a positive social stand in the community. I tell you, and you know from your own experience, that no dentist can attend to social functions and attend to his dental practice at the same time. His work is so exacting, the demands upon his physical and his mental powers are so great, that he could not if he tried attend to both of these and the work in his office.

We are doing in the dental profession just what is being done in the other professions. We are doing our best. Our most generous efforts are being put forth for the good of mankind. My brother here to the left (Rev. Dr. Moxom) is doing what he can to elevate the souls of men out of the darkness into God's effulgent light; the medical men are doing what they can to prevent human suffering, to alleviate the miseries of mankind, and to make the world healthier and better. We, gentlemen, are doing just as grand a service. We are preventing human suffering. We are alleviating the suffering of our kind. We are doing the best we can for the world according to our enlightenment.

"All are architects of Fate,
Working in these walls of Time;
Some with massive deeds and great,
Some with ornaments of rhyme.

"Nothing useless is, or low;
Each thing in its place is best;
And what seems but idle show
Strengthens and supports the rest.

- “ For the structure that we raise,
Time is with materials filled;
Our to-days and yesterdays
Are the blocks with which we build.
- “ Truly shape and fashion these;
Leave no yawning gaps between;
Think not, because no man sees,
Such things will remain unseen.
- “ In the elder days of Art,
Builders wrought with greatest care
Each minute and unseen part;
For the gods see everywhere.
- “ Let us do our work as well,
Both the unseen and the seen;
Make the house, where gods may dwell,
Beautiful, entire, and clean.
- “ Else our lives are incomplete,
Standing in these walls of Time,
Broken stairways, where the feet
Stumble as they seek to climb.
- “ Build to-day, then, strong and sure,
With a firm and ample base;
And ascending and secure
Shall to-morrow find its place.
- “ Thus alone can we attain
To those turrets, where the eye
Sees the world as one vast plain,
And one boundless reach of sky.”

President Flanagan.—We have in the community of Springfield a gentlemen who is greatly interested in historical investigation, a man who has responded to many invitations throughout the United States, along certain well-known educational lines, and in introducing the speaker this evening I wish to emphatically say that “The Main End” of the Rev. Dr. Moxom’s career in Springfield has been for the uplifting on the broadest and best terms of the people of that community. I have great pleasure in introducing Dr. Moxom.

Rev. Philip S. Moxom, D.D.—MR. PRESIDENT, LADIES, AND GENTLEMEN,—We are often thankful to get to the end, even of a

banquet. I do not know how many years ago it was, but it was less than twenty, I think, and more than ten, that I was invited to speak before this body. It was a novel experience, for I had never addressed a meeting of dentists before in my life. I did not even know that there was such a society as that of dentists until that night. I puzzled my brain over the question of what I could say to a body of men devoted to the dental profession, and I finally reached a certain conclusion which I expressed in the course of my speech. I was seeking for points of affinity, points of sympathetic touch, between your profession and mine. I am wiser now; I know of a good many. (Laughter.) But the conclusion I reached then, as I can recall it in part, was that both of us had a good deal to do with decayed members. (Laughter.) Another point was, that both of us were under obligations to go to the roots of things. (Laughter.) And the third point was, that we were both engaged in an effort for salvation. (Applause.)

It is always perilous to attempt to repeat a speech that one has once made. There are people I know who can do it, and it always seems right; it always fits, whether they are addressing an association of dentists or an association of undertakers, or a company of gentlemen on the Stock Exchange or a ministers' meeting, just as there are some men who have only one story, and they always tell that story, and it always seems new. I remember a man who had but one story, and that was about a gun, and he always told it; and if he could not bring it in in any other way, he would rap on the table sharply, saying, "What is that? It sounds like a gun. Oh, speaking of guns, makes me think of this," and then he would tell his story. (Laughter.)

I find great pleasure in addressing this body again. It seems to me that you have been growing younger, and I am sure you have been growing handsomer. It is quite apparent you have inverted the remark which I once heard: a gentleman looked down upon his audience, in which there were a great many bald heads, and said that it was the most extraordinary combination he ever saw, as there was the most brains and the least hair he had ever noticed together; but to-night we have a combination of hair and brains, with only here and there a pate that begins to grow shiny like mine. Those of us, however, who are in that condition may comfort ourselves with the fact that the highest degree of mental attainment is signified by the loss of one's hair.

I find great pleasure and satisfaction in addressing this body, because I have observed that in the dental profession there has been during the past twenty years a progress unequalled by that of any other profession or calling with which I am acquainted. I do not wish to assume the implied attitude of a critic by praising. It might seem that to praise you of this day and generation would be to reflect upon the past age, but that is not true, and it is always well to tell the truth. I am not disposed to flatter, but I give it as my conviction that at no time in the history of dentistry as a profession have the members of the profession stood so high in all those qualities that make up the intelligent gentleman as the profession stands to-day. It has made progress in skill; it has made progress in therapeutic and conservative ability; it has made progress and standing in the community; it has made progress in morality. To-day the profession of dentistry stands side by side with that of medicine; to-day it is a recognized branch of the medical profession, quite on a par in the scope of its ministering and in the power of its service to human kind with that of the medical profession. I suppose one must always be true to his calling, and, being a preacher, I must preach; I have a capital chance, for I do not know whether I shall ever have so many dentists to preach to again, and I am very much tempted to take this opportunity. You know the story they tell of the man who, talking to Charles Lamb, said, "Did you ever hear me preach?" "Oh," said Lamb, "I have never heard you do anything else." (Laughter.) I suppose I may plead guilty to the same charge.

In stating the subject, "The Main End," I had two things in mind. You remember the story of the preacher who always preached on eternal punishment, no matter what his text was. One day, to get him off that text, it was proposed to give him a text, just as he was going to enter the pulpit, on which he should preach. He accepted the proposition, and as he entered the pulpit he was handed a sealed envelope containing a paper on which was written, "Adam, where art thou?" He began to preach, and he said, "My brethren, every man is somewhere. That is the first head. In the second place, a good many people are where they ought not to be. That is the second head. In the third place, if you don't look out a good many of you will be where you don't want to be. We will omit the consideration of the first two heads, and give our attention to the last." And then he went on and

preached his usual sermon about eternal punishment. (Laughter.) But I find myself going back, not to that theme, but to one that is to me the most vital of all in the world, and which is suggested by the words of my subject.

What is life? For what are we striving? What are we seeking? There are two lines of thought that present themselves to our minds as we consider this question. What are they? The main end or aim of every man who intelligently faces life is efficiency in service, no matter what that service may be; it may be your profession, it may be mine; it may be that of any one else; but it is efficiency in things which you are called upon to do. "Failure," in big letters, is written right across the life of any man who has not clearly in mind that his first business in life is to be efficient in the thing he is called upon to do. If it is to make shoes, to make them so well that all the world will want to walk in them. If it is to practise medicine, to be so faithful and diligent in study, so broad in sympathy, so alert, so persistent in his endeavors to keep in contact with all the best knowledge that is emerging from the laboratory, that he shall be possessed of the highest efficiency which he can achieve.

There are a great many men who begin their lives with utter indifference. They have not clearly thought out what they are living for; they are going to work for money. There is many a man who begins a profession for what he can make out of it. He does it in a sordid way; he is going to make money to get on. However efficient he may be, actuated by such a motive as that, he cannot be efficient in the larger sense, for, under the influence of an ignoble motive, he will sacrifice the best elements of power which lead to the higher efficiency. Nor can it be mere success. Success is a great word with the Americans, and I don't believe they are the only devotees in the world of that ideal. A great deal has been said about the American love of the almighty dollar, but I find that the people, the world over, are after the dollar, or the mark, or the franc, or the coin of some other denomination, and it is all one thing. I was in Venice one day, and I heard one of the most extraordinary quarrels I ever listened to between two men over the purchase of half an orange which cost two-fifths of a cent. It does not make any difference whether it is cents, or centimes, or franks, or marks, or dollars, or pounds, shillings, and pence.

Success is a nobler thing than the mere material results of gain,

because there is more inspiration in it, and a man who seeks success for the sake of success is a nobler man than he who seeks to do anything for what he can get out of it. No man in this world can do his best work unless he has the power to idealize his work; that is, to interpret it and see it in its largest relations. What is work? Whether it be that of the artisan or the professional man, it is the service of mankind. It is to minister to others. It is not simply the thing that he does, but it is that in its relation to the whole life. It is for the alleviation of pain that he is striving, the preservation of human power, the refinement of human life. Certainly a nation that has well-preserved and well-guarded teeth is so far a better nation, in all the qualities that go to make up a nation, than a nation which is not sound, because the teeth are related to the whole structure of the face and head, and the whole anatomical and physiological and nervous structure, and the proper care of that part is a powerful addition to the totality of the man; and the service of dentistry is, therefore, a ministering to the whole man, not only in the alleviation of pain, but in the development of that soundness of organism through which the man shall express himself most fully and effectually, and which shall be the vehicle and model, so to speak, in which shall be found the finest and noblest life.

One of the greatest thoughts that has emerged in our time to new prominence is that of the integrity of life. Man is not an ingenious production of the Creator, like a modern steamship with water-tight compartments, divided off by iron and steel, but he is one entire thing, and he needs to be right through the whole gamut of his being; and to live his best he must have a good head, a good hand, good feet, good lungs, a good heart, a good conscience, good intelligence, good imagination, good power of reasoning; and you cannot have a complete man unless each of these is fully developed. Your work and my work, and the work of every other man, rightly interpreted, relates itself to the totality of his life, and he who idealizes his work in that way enobles it and ennobles himself. The carpenter who builds a house is not merely putting together lumber, boards, and scantling; he is making a home for human lives to live and grow in; creating a place for human love and tenderness that shall flow out in the community, and every nail he drives is driven more surely because his heart goes into the stroke of his hand. If that is true of the man whom we call

an artisan, it is even more true, if possible, of the man who stands on the higher plane of the professions.

So that the first thing of all is to seek efficiency in service. He is false to his profession who does not make the most of his time and opportunity to attain to the highest skill possible. He has no right to neglect those things which tell of the latest advances in dentistry, to neglect the knowledge of chemistry and other sciences which shall qualify him to be skilful. He has no right to neglect any study of the human body and its functions which will qualify him to judge of the conditions of any part of the organism with which he deals.

But that, after all, is only the beginning. The true man and true woman is working for an end, which is the fulness and completeness in life. The workman must be more than his work. If the dentist is not more than a dentist, he is not as good a dentist as he ought to be. If the farmer is not more than a farmer, he is not as good a farmer as he ought to be; and if the politician is not more than politician, he is not as good a politician as he should be. The true end of life is that culture which amplifies the whole nature, and refines and enlarges it, until man stands up a complete man before his Creator. Humboldt said, "The finest fruit earth yields up to its Maker is a finished man."

What is culture? A smattering of Greek or Latin? I suppose any of us here could chatter a few sentences in any of the ancient or modern languages; that we could "*parlez vous Français*," or "*sprechen Sie Deutsch*," but that is not culture. Is it the ability to dash off a few brilliant bars on the piano, or to play one of Chopin's studies, or one of those brilliant, incomprehensible compositions of Bach, or one of those thunder-like productions of Wagner? Is that culture? Then what is culture? It is the power to use and the disposition to approve whatever is excellent in art, in nature, in literature, in life, in action. The man who cannot see a good thing and know it from afar lacks culture. The man who can see it has the true essence of culture. But we see according to what we are, and every man brings the qualifying element which determines his vision. What you are, my friends, determines the interpretation of the world which you find, and if the world is warped and mean and low, there is something warped and low and mean in you. If you are loving and pure and aspiring, you will see the noble and the beautiful in life,

and, seeing it, will grow to love it, and your whole being will enlarge.

This, then, is my message, a message which I bring with the more confidence and the more earnestness, because I know how the ideal of the professional life has developed in men who to-day are carrying on the profession of dental surgery. That is as it should be. The continual aspiration of the man or woman engaged in this noble profession to be always more than the thing they do, to be always a man, a woman, watching the mind, chastening and developing the heart, cleaning the conscience, widening the range of view, laying hold of the truth on every hand, finding out the beauty that is on every side, and bringing one's life daily more and more into harmony with the melody that rolls through all things.

So, if I may particularize for a moment, every dentist should have an avocation,—something else which he does besides the practice of his profession; something which will react upon him and widen his sympathies and develop his character; something which will make his life larger in its active operations than the one line in which he works as a professional man. I do not think it is a bad thing to have a hobby. We hear a good deal of scorn and ridicule poured out on hobby riders, but strange to say they have been the men who have pushed civilization ahead, just as some one has said it is the cranks that make the world go round. Dear old Dr. Schuyler, the man who cannot hear his own voice, and who would die of fright if he did, for it is the most terrible voice, speaking the other night of a visit he paid to an old church in England, said he found there in the floor of the church, what you often see in churches and cathedrals in England, a tomb of the dead. You will remember that Jane Austin, the writer, is buried in Winchester Cathedral, and you can stand on the stone under which she lies and read the inscription upon it. As Dr. Schuyler was going through this church he noticed a stone under his feet, the inscription on which said that it was the tomb of Jeremiah Hooper and his seven wives, who all laid under the one stone. Dr. Schuyler said to the verger who was accompanying him, "That is a good many wives, is it not?" "Well, you see," said the verger, "it were a hobby of his." (Laughter.) Now, I do not counsel you to adopt that kind of a hobby, but a hobby may be a good thing. I know a gentleman who has a lathe, and he has learned to work out the most interesting and curious and practical and valuable

things on his lathe. Another man takes up something else; it may be a certain line of history which he masters, and you can go to him and he can tell you anything about it, and you can learn more from him in a few minutes than you could from anybody else, because he has put his spare time into that and he knows of it. Another man has made a study of birds. He will walk through the woods and see birds where you see none and hear notes you cannot hear. There will be a twitter in the bushes, and he will say that is such and such a bird, or you will see something flutter through the trees, and he will tell you the bird and its habits, where it goes when it migrates, and all its characteristics. His mind is full of a rich knowledge of all the birds of creation. Whatever it may be, have an avocation. Something that you will know well, that will enlarge your life and give you joy and refreshment; for in seeking this completeness of life one needs not only an avocation, but some wider interest to link him with his fellow-men.

First of all,—and I wish I could say this to the young men who are gathering there at the college at Philadelphia, for I know something about them; I have a boy among them,—I should say to them that one of the first things, in order that a man may advance at all, is downright, persistent, unflinching sincerity. Be what you feel. We had a motto in college which read, “Not to seem, but to be,” and it is a good motto for every man to take; not to stand before the community under a false disguise, not to disgrace one’s profession by being one thing in his professional office and another thing when he is on the street or at his play, but to be the straightforward, sincere, true man wherever he goes.

I have a great deal of sympathy with Pat, who, being shown an epitaph on a tombstone which read, “He is not dead, but sleepeth,” said, “Bedad, if I was dead I would own up to it.” (Laughter.) It is a great deal better to acknowledge you are dead than to say you are sleeping. Whatever you do, stand up squarely before the whole world for the thing that you are. The great thing in life is to be. God has given us prophetic suggestions in the history of the world of what man may be. We have had such suggestions, wonderful and inexplicable, in the great Greek sculptures. The despair of the artist, the matchless grace of Praxitiles, the exquisite form of Phidias, as if God had set in the midst of the centuries a model and said, “There, that is what I

would like you to be like." The great Greek dramatist Æschylus, with his thunder note and the roll of the Ægean vibrating through his stanzas; Sophocles, with his rich melodies, and Eurypides, the Greek, who was the greatest foreshadower of Shakespeare the world ever saw; Shakespeare, the myriad-minded, as Coleridge called him, and of whom Bishop Clark said years ago, "There is but one Shakespeare, and heaven and earth were exhausted in making him." But that is not true. Heaven would show to us by these eminent examples what man can be and do, and, instead of causing us to despair, create in us the hope and endeavor and aspiration to be more than we are. And there is one man who forever induces us, forever prompts us, by the inexpressible height of his sincerity, of his truth, and his purity, not to give up or despair, but shows to what height we may aspire. Charles Lamb was in the company of his friends one evening, and they were talking about the homage due to great men. Shakespeare was mentioned, and some one then mentioned Jesus, when Lamb said, "If Shakespeare were to come into this room, we would all rise to do him homage, but if that man were to come into this room, we should all stoop to kiss the hem of his garment." He was the great physician, the great helper, who fills us not with despair, but gives hope to every man and every woman who is seeking a nobler and a higher life.

So, my friends, this is the word I would leave with you, the deep and earnest message of my heart: make the most of your magnificent profession, and make the most of it by being the biggest, the broadest, the largest and sweetest and loftiest of men, inspiring men and women, and to this end knit up your life with every interest that can broaden it, and forever be more than a mere artisan, forever be more than a mere professional worker; be men, large-minded, tall, full of sincerity and purity and truth, so that wherever you go or wherever you work, the community shall feel the uplifting power of your presence and all men shall bless your name. (Loud applause.)

President Flanagan.—The thanks of this Association are due and are now freely given to those who have honored us by addressing us this evening, and to all the people who have attended our meeting. The meeting will now adjourn.

(To be continued.)

NEW JERSEY STATE DENTAL SOCIETY.

THE thirty-third annual meeting of the New Jersey State Dental Society convened at the Beach Auditorium, Wednesday morning, July 15, 1903, Dr. Frank L. Hindle, of New Brunswick, the President, in the chair.

After the usual opening preliminaries the President read his address, which was short, and confined to matters of local interest only. This concluded, the meeting adjourned until evening.

The first paper at the evening session was by Dr. Otto E. Inglis, of Philadelphia, upon immediate root-filling. While the paper gave a fair *résumé* of the reasons, *pro* and *con*, for immediate root-filling, and of the conditions when it should be done, and of those requiring caution, it presented nothing especially new. The discussion developed nothing more than has been frequently recorded.

Dr. E. C. Kirk, of Philadelphia, followed with a well-considered paper upon "State Reciprocity of Dental License." He first reviewed the early history of the various settlements which eventually formed the United States, and stated clearly the causes which led these scattered communities to so tenaciously hold and defend the right of self-government. Even during the strenuous struggle of the Revolution this was not lost sight of, and immediately after that fight was won, when it became evident that a closer union was imperative, this right was grudgingly relinquished only so far as the general safety demanded. This was evidenced by the long discussions which preceded the adoption of the Federal Constitution, and the time which elapsed before some States accepted its provisions. Time has not changed this. All legislation which to any degree tends to limit inherent State rights, either by the general government or by the several States, is vigorously contested. Reciprocity of dental State license comes under this head. It cannot be demanded as a right; if it comes at all it must be as an act of courtesy. He suggested that this might be accomplished by a grouping of the States whose requirements were nearly alike and which had adopted much the same standard. Indeed, to some extent this has already been done, and some States have authorized their State boards to recognize the certificates of sister States which in their judgment maintained a standard as satisfactory as their own. By extending this courtesy much just cause of complaint

would cease to exist, and as the several groups would eventually find that as their standards were high their certificates of qualification were more valuable and were more widely recognized, this would be to those whose standard was low an incentive to reach a higher level. To accomplish this would require but little new legislation, and would not trench in the slightest degree upon the inherent right of each State to fix its own requirements.

This paper caused an animated discussion, and, while diverse views were presented, the essayist's suggestions were favorably received. The injustice of the present condition of affairs was generally conceded, and it was urged upon all present to use their influence to bring this matter before the National Associations about to assemble, in the hope that some means may be found to bring about a better state of things, and to mitigate the annoyance and constraint a dentist constantly meets when removing from one State to another.

Thursday morning, July 16, Dr. A. W. Harlan, of Chicago, read a paper entitled "The Drug Aspect of Lesions of the Gums." Dr. Harlan stated that, while much attention had been paid to the care of the teeth, the care of the gums had been comparatively neglected. While he would not disparage the importance of keeping the teeth clean and free from deposits of all kinds, he desired to enforce the equal importance of taking care of the gums. Serious results very frequently had their origin in slight injuries to this important tissue. Carelessness in the use of toothpicks, floss silk, tooth-brushes, etc., in the hands of our patients, and carelessness in the use of ligatures, wedges, clamps, scaling instruments, etc., in the hands of dentists, is undoubtedly responsible for much injury resulting ultimately in tooth loss. He deprecated the use of so-called breakfast-foods and other predigested, prepared foods, because they did not require mastication. The gums need friction and the teeth exercise, and such foods only should be used as require healthy mastication. The well-being and integrity of the gums is essential to the well-being and integrity of the teeth, and both are essential to good health. The gums protect the tissues upon which the stability of the teeth depends; when this protection is lost, these tissues cease to properly perform their function, they are broken down, the teeth are denuded, loosen, and soon become useless. Lesions of the gums are also due to general lesions, and in turn, in many cases, seriously affect the general health. Mouth-

washes are numberless, but, as a rule, not of much use. Friction is essential to the health of the gums and the teeth; nothing can take its place. He especially pleaded for more care to preserve the integrity of the gums and the peridental membrane, and more attention to the first beginning of injuries to these tissues. A touch of the grindstone to relieve malocclusion from a projecting point of a tooth or a filling, a little more care in adjusting appliances, a little more thoughtfulness, when inserting a filling, to avoid, in the effort to reach perfection, undue stress upon the delicate tissues supporting the teeth, and much more attention to see that these tissues are as well taken care of as are the teeth themselves, he urged, would, in many cases, prolong the usefulness of those organs it is the special duty of the dentist to conserve.

In the discussion which followed, the points taken by the essayist met general approval. Incidentally, the advantage of training women as dental nurses was advocated. It was suggested that the lady assistant, by a short course of instruction, would be qualified to give the teeth and gums all needed attention under the supervision of the dentist, and it was also suggested that this division of dental practice should receive legal recognition.

The dentist of to-day is too busy to give the necessary attention to the minor details which are as essential and as important as the most difficult surgical operation. Women versed in the elementary principles of dentistry are to-day most important and necessary adjuncts to the well-regulated dental parlor.

The morning session was concluded by the reading of an essay by Dr. T. D. Shumway, of Plymouth, Mass., upon "Scientific Malletage in filling Teeth." The doctor reviewed the changing views entertained regarding the vitality of the teeth and their relation to the general system since the time Hunter wrote, and argued that, as we now recognize the teeth as vital structures, this should be taken into account in all operations upon them.

The afternoon was devoted to clinics. While the list of clinics upon the programme was a lengthy one, and promised a very instructive afternoon, comparatively few were on hand. Porcelain inlays took the lead, but nothing especially new was shown. Several cases of regulating were illustrated by plaster casts, which, while interesting as showing what may be accomplished, were instructive only to those who followed closely the operator's explanation. Regarding porcelain work, one point may be of interest. The gentle-

man demonstrating the Jenkins system contended that low-fusing porcelain should always be fused by heat applied under the matrix; that attempts to fuse it in muffles, such as are provided with furnaces for working high-fusing porcelains, will always be uncertain, if not failures, because the heat is applied all around the matrix, and is not sufficiently under control. When applied at one point, fusion takes place gradually, the porcelain settles down into the matrix, forming a more solid homogeneous mass than when fused in a muffle, and the operator can more readily see when complete fusion has taken place, and thereby avoid overheating. With low-fusing porcelains, he contended, the latitude between just right and too much was limited, very much more so than with the higher-fusing. He suggested that the discrediting of low-fusing porcelains was due to a failure to recognize this, and contended that, used with proper care, low-fusing porcelains were as strong and as reliable as the high, while much more readily worked, and with the same skill more certainly produced accurately fitting inlays.

Dr. William N. Kidder, of Providence, R. I., demonstrated a method of making seamless shell crowns to fit over a model by his hydraulic crown swedger. With this device a model of the tooth over which the crown is to fit is first made of fusible metal. The gold thimble, thoroughly annealed, is fitted over this as well as may be with a smooth-faced hammer, and all surplus gold that safely can be is removed. The model, with the partly fitted crown in place upon it, is now put into a rubber bag about the size of a finger-stall, the open end closed with a clamp, and then placed in the machine. The machine consists of a cylinder into which a screw plug fits. After the crown and model are in place the cylinder is filled with oil, the plug partly screwed in, and a valve opened to allow any air to escape. The valve is then closed and the plug screwed firmly into the cylinder. This produces a very even pressure upon all sides of the contained model, forcing the gold cap into close contact, with no risk of bruising or crushing the fusible metal. It seemed a practical device, and a decided improvement over all others designed for producing a crown to fit over a model.

At the evening session Dr. Genese, of Baltimore, demonstrated a method of mixing plaster with a solution made from rice, by which the plaster is made much harder, and the time of setting more under control than when water is used. With plaster so

mixed he quickly made a splint, such as would be used in treating a fractured lower jaw. For this purpose he used a long bag, open nearly its full length on one side, and provided with four tapes to secure it in place. This was filled with plaster mixed with the rice solution and kneaded until about to set. It was then adjusted to place, held securely by the tapes tied over the patient's head, and manipulated so as to make a comfortable fit to the chin. In about five minutes it had set sufficiently hard to be removed, and formed, when fully hard, a rigid, yet easy fitting splint that would, without uneven pressure, firmly support a fractured jaw.

The remaining sessions of the meeting were occupied with society business. On Friday morning the following officers were elected: President, Dr. Herbert S. Sutphen, of Newark; Vice-President, Dr. W. G. Chase, of Princeton; Secretary, Dr. Charles A. Meeker, of Newark; Treasurer, Dr. Henry A. Hull, of New Brunswick.

Sixteen new members were added. The finances were reported to be in a very satisfactory condition, and the Society contemplates in the near future providing for itself suitable head-quarters. The exhibition of dental supplies was a prominent feature of the meeting, and exceeded any previous effort. The large auditorium was fully occupied, and the exhibition, in extent, variety, and interest, fully equalled that of the dental manufacturers recently held in Philadelphia.

W. H. T.

Editorial.

W. C. BARRETT'S "LINK IN OUR PROFESSIONAL HISTORY."

THERE is a universal feeling that when a person has passed beyond this active life that criticism should cease. This feeling is not only natural, but it does honor to our common humanity. The writer not only sympathizes with this feeling, but would, with rare exceptions, let the curtain fall upon the life and acts of his friend or enemy this side the open grave.

There are occasions, however, when it becomes imperative to vio-

late this excellent rule, especially where it is to correct some important points in history, or to deal justly with individual actions.

In the October number of the *Dental Cosmos*, that contained the obituary of Dr. Barrett, there appeared an article penned by him a few months before his death, and read before the New York State Dental Society in May last. This posthumous publication contains so many errors that it becomes necessary that an early answer should be made even at the risk of possibly injuring personal feelings.

Dr. Barrett has called this a "Link in our Professional History," and if the link were without flaw no objection would or could be made to the chain he forged to connect the present with the past, but unfortunately his link was not securely welded, and failed to hold his history well together.

His account of the rise and progress of the *Independent Practitioner* is of special interest to the writer, for from that source arose the INTERNATIONAL DENTAL JOURNAL, and it is due to Dr. Barrett and the syndicate that supported him in New York, that all honor should be given them for their unselfish work in founding and supporting a journal independent of commercial affiliations.

This portion of the link in dental history seems, with that which follows, to be preliminary to the main argument that Dr. Barrett and his colleagues primarily paved the way that led directly to the formation of the National Association of Dental Faculties. In order to demonstrate this he begins with what he regarded as the "irregular graduation of certain well-known and highly esteemed practitioners who had received a diploma in course from the oldest dental college in the world, *sine-curriculo*, and after an examination which it was alleged was but a mere form." Dr. Barrett had all the matter relating to this put in type to present to his colleagues at the old Delavan House at the meeting in May, 1884. His colleagues at first hesitated in regard to publishing this matter, but these objections were finally removed and it was given publicity in the journal under his charge, and, of course, created a sensation. It is too late a period to enter a defence of the action of the Baltimore College of Dental Surgery, nor does it come within the purview of this article, but it may be said in extenuation that this action was by no means exceptional at that time, for it was a general feeling among dental educators that some means should be devised to bring those who had been in practice from fifteen to twenty years into the professional fold, and exceptional efforts were made to accomplish this. What

was done legitimately twenty or thirty years ago cannot be criticised to-day with an altogether different code of ethics.

In view of this serious action of the Baltimore College Dr. Barrett drew up a resolution covering the main points deemed objectionable and presented this to the New York State Dental Society and it was there adopted. This resolution summoned the faculty of the Baltimore College of Dental Surgery "to appear at the next annual meeting of that Society and show cause why, for alleged irregular granting of its diplomas, the name of said college should not be stricken from the list of colleges whose degrees are recognized," etc. It is one of the singular facts in dental history that Professor R. B. Winder, dean of that college, should have acceded to this demand. It is presumed it was done in the interest of peace, but it would be singularly out of place for a State Society to attempt to deal with a dental college in this summary manner to-day. Dr. Winder succeeded in satisfying the State Society that diplomas of the character complained of in the resolution would not in the future be granted. In view of this concession the matter was dropped. The resolution of Dr. Barrett of 1884, with the subsequent action of the State Society, were, of course, published in the *Independent Practitioner*, and, in the language of Dr. Barrett, "they were a bomb-shell." Immediately "a meeting of the representatives of the principal dental colleges was called to assemble in the Sturtevant House, in New York City, on Monday, August 4, 1884, and the dean of the Baltimore College of Dental Surgery was foremost in promoting and furthering its objects." Any one reading the foregoing statement would at once reach the conclusion that the Association of Faculties began its work in the city of New York through the influence exerted by the New York State Dental Society through its action previously narrated.

A true account of the origin of this now somewhat celebrated association has never been correctly written out, and it seems, therefore, very necessary that this should be done now while two, at least, of those who took an active part in it are still able to give a correct history of the steps that led up to its formation. In view of the fact that no written account has heretofore been given, it is not surprising that Dr. Barrett and his colleagues cherished the conviction that the work of the State Society hurriedly influenced the dental colleges to call the initial meeting in New York the same month and the same year as that in which said Society met. Had

Dr. Barrett been a college man at that time he would not have been led at this late date into this serious error. He did not become a member of the Association of Faculties for some years after this, and was, therefore, not well informed of its inside and early history when the article was penned.

The original call for the meeting held in New York City was the work of four deans of separate colleges, three in Philadelphia and one in Baltimore. This conference was called through the earnest work of Professor Winder, of Baltimore, and to his labor the Association owes its origin. The motives that actuated all the said deans to agree to a conference cannot be made clear at this time, for but two are living, Drs. Garretson and Winder having passed beyond the reach of interrogation. The two left, Dr. Peirce and the writer, can state, unreservedly, that the New York State Dental Society had nothing to do with, and had no influence in, its formation; in fact, the influence of that Society at that time, was confined principally to its own State; neither was Dr. Barrett's influence of much importance in dental educational matters. He did not appear in the Faculties Association until August, 1894, a whole decade after this conference was called. His work as an editor was then just beginning to be felt, and it was not altogether favorably received by the dental educators of the period.

Long prior to the first meeting of the four deans conferences were individually held. The writer had several with Professor Winder, who came from Baltimore for the purpose, and in all these consultations the main question for discussion was the probability of uniting a sufficient number of colleges to make an association effective in controlling educational matters. They were certainly not influenced by any outside pressure. The attempt at organization had been made previously by others, and failed, hence the natural doubts that prevailed as to any success with the segregated schools. Whatever may have been the motives of each of the four deans, selfishness was not one of these. They all felt that unless there was a united effort put forth by dental colleges, there could be no advance, and unless the schools progressed, the general profession would remain where it had been in the past. It was therefore evident that the isolated dental schools were a menace to dental education. This conclusion was not reached suddenly, but was the result of years of experience and of earnest thought. Hence the absurdity of Dr. Barrett's conclusions that it was all the result of the work

of a State society. It is true, however, that this thought and experience crystallized during the winter of 1883-84, and resulted finally in calling a meeting, as heretofore stated, of the deans of the Baltimore College of Dental Surgery and all the three Philadelphia dental schools. The conference met at the office of Dr. C. N. Peirce, Philadelphia. Those present were Dr. R. B. Winder, of the Baltimore College of Dental Surgery, Dr. J. E. Garretson, of the Philadelphia Dental College, Dr. C. N. Peirce, of the Pennsylvania College of Dental Surgery, and James Truman, of the Department of Dentistry, University of Pennsylvania. The entire subject of organization was considered. The outlook for union was not favorable, but it was concluded to test the matter, and the conference decided to call a meeting to be held at the Sturtevant House, New York City, August 4, 1884. Circulars were sent out and notices were published in the dental periodicals, and upon the day appointed the four deans were present in New York City, somewhat anxious as to the final outcome. Several of those present were strangers to the writer, but the number exceeded our anticipations, and in itself was an encouraging beginning.

The schools represented were the following:

Baltimore College of Dental Surgery, Professors R. B. Winder and M. W. Foster.

Boston Dental College, Professors J. A. Follett and A. N. Blodgett.

Chicago College of Dental Surgery, Professor A. W. Harlan and Dr. F. H. Gardiner.

Harvard University, Dental Department, Professor Thos. Fillebrown.

Dental Department, State University of Iowa, Professor A. O. Hunt.

New York College of Dentistry, Professors Frank Abbott and J. Bond Littig.

Dental Department, University of Michigan, Professor J. Taft.

Ohio College of Dental Surgery, Professor H. A. Smith.

Pennsylvania College of Dental Surgery, Professors C. N. Peirce and Henry Leffmann.

Philadelphia Dental College, Professors J. E. Garretson and S. H. Guilford.

University of Pennsylvania, Dental Department, Professors James Truman and E. T. Darby.

Letters were received from the deans of the Kansas City Dental College and the University of California, Department of Dentistry, indorsing the objects of the meeting and pledging their support to the movement. Dr. C. N. Peirce was, on motion of Dr. Foster, made temporary president, and Dr. H. A. Smith, temporary Secretary. A committee on permanent organization was then chosen, consisting of Professors Truman, Winder, and Taft. This committee was given a somewhat arduous task. They had no precedents to govern them. While all were familiar with constitution making, here was an organization proposed for which laws, as usually understood, were not applicable. It became at once evident that time and experience must evolve legislation, and the committee therefore decided upon seven articles as a basis of organization, and called it the Constitution, and since then only one additional article has been added. The constitution as prepared by the committee was adopted, and all present signed it with the exception of Harvard, the delegate, Dr. Fillebrown, stating he had not had the authority of the governing board to bind the University. This was, at a subsequent meeting, given, and Harvard University, Department of Dentistry, became an active member and continued such until August, 1903, when its resignation was presented and accepted.

The following permanent officers were then elected: C. N. Peirce, President; R. B. Winder, Vice-President; H. A. Smith, Secretary; A. W. Harlan, Treasurer. Frank Abbott, J. Taft, and James Truman were made members of the Executive Committee.

The first business was that presented by Professor Winder, who moved that after the close of the session of 1884-85 the clause, "in the requirements for graduation of the schools belonging to the Association accepting five years' practice as the equivalent of a first course of lectures," be abrogated. This was amended by Professor Truman, "That after the close of the session of 1884-85 students at the dental colleges be required to attend two full regular courses of lectures before coming up for graduation." This was adopted with the proviso offered by Dr. Harlan, that the two courses of lectures should be taken in separate years. Thus this most discreditable measure, of five years practice as equivalent to one session, was, at the first session of this body, relegated to deserved oblivion.

Dr. Barrett is in error in stating that this meeting was all held at the Sturtevant House. Nearly all those present were members of the American Dental Association about to convene at Saratoga

Springs, N. Y. The meeting adjourned August 4 to reconvene at Saratoga, August 5, 1884. At this place all the colleges that had signed the constitution were present. The subsequent proceedings are not of sufficient general interest to warrant quotation.

The work of the National Association of Faculties from that time to the present, now nineteen years, has been steadily to legislate for a higher standard. Through its influence the dental colleges of this country have now reached a position where any further changes will be unnecessary, except in one particular,—that of increasing the requirements for entrance. It may take several years before the weaker schools can be brought to adopt a standard already in force in the Dental Departments of universities.

In view of the fact that the organization has practically completed the work hoped for by its originators, it may be questioned whether the time has not arrived to consider the propriety of changing its character from a legislative body to one more in harmony with that of the "Institutes of Dental Pedagogics," and perhaps unite these two organizations. Something of this kind must be accomplished in the near future, or the National Association of Dental Faculties will have ceased to be of value to dental education in this country.

While this is true, the writer has no sympathy with the criticisms constantly aimed at this body, and more the past year than heretofore. This organization has performed a great work in moulding dental educational thought, and has accomplished this amidst difficulties not understood by outsiders. That it may be equal to further changes along more advanced lines of work is the earnest wish of the writer, and that through its influence dental education during the twentieth century may progress to a position beyond the dreams of the most sanguine of the dental educators of the past fifty years.

The following abstract of a note received from Dr. C. N. Peirce, dated October 8, 1903, fully confirms the writer's previous statements. He says, "I am very firmly impressed with my frequent letters from Dr. Winder, and also with the fact that he spent a day and night with me in considering the necessity for the Association and the advantages to be gained from such a union of the faculties of the different schools. I had letters from Drs. Taft, H. A. Smith, and Frank Abbott on the same subject, but Dr. Barrett

was not in it in any sense. Dr. Winder was more active in corresponding with the deans of the more important schools.

"Dr. Winder's arguments in favor of the association were numerous, but one of the strongest was the harmony that would be engendered by working for a common end as well as the improvement of the curriculum and the betterment of the schools.

"There was a meeting of the schools at my office in Philadelphia. I do not recall that it was the final one, but the whole subject was discussed and the feeling in favor of the meeting in New York was very decided. The meeting in New York was called soon after I had a conference with Dr. Winder, he having letters from a number of deans throughout the country, all of these being favorable to the meeting.

"I think I never attended, or, rather, never was one of a body of men where a singleness of purpose was more marked than at this meeting. I am sure I never did where there was less striving for position."

(Signed)

C. N. PEIRCE.

THE FIFTY PER CENT. RESOLUTION OF "EXAMINERS."

THERE has been so much misunderstanding in regard to what the National Association of Dental Examiners decided upon at Asheville, N. C., that the secretary, Dr. C. A. Meeker, was requested to furnish a correct copy of the resolution adopted. This was very courteously given and it is therefore appended, as furnished from that authoritative source.

"*Ordered*, That the Committee on Colleges be and they are hereby ordered and directed to revise the list of recommended colleges of this Association; and be it further ordered and directed that the Committee on Colleges obtain from the various State Boards a statement showing the number examined, passed, and rejected from each college, and that when it appears that fifty per cent. of the graduate students from any college fail to pass in States where examination is necessary for registration that the Committee on Colleges shall report such facts to this Association for such action as may seem fit and proper."

Any one reading this intelligently will see that the editorial in September number entitled "A Step Backward" was not very far

wrong in its conclusions. The National Association of Dental Examiners cannot perfect a list of colleges, under this rule, until the examinations are finally closed in June of 1904. The resolution does not require any fixed period for the course, consequently this is left to the judgment of the State boards. It is impossible to discover in this resolution anything, but the State law, to prevent any board from examining students from colleges that have not adopted the four years' course ordered by the Association of Faculties. If the National Association of Dental Examiners has any power to control State boards, it has practically antagonized the dental colleges in their efforts to increase the length of term, and it is impossible to see why a State board could not examine students of a college having a one-year session. Under some State laws this, of course, could not be done, but the majority of said laws simply require a "reputable college." The word reputable is very elastic, and could apply to a college of one year as well as one of four years, it all depending on the decision of the State board.

The members of the National Association of Dental Examiners who have criticised sharply this journal for said September editorial evidently failed to understand the drift of the resolution to which they gave their support at the Asheville meeting.

JONATHAN TAFT.

At midnight of the 15th of October, 1903, passed away from earth Dr. Jonathan Taft.

The life of such a man can scarcely be written by his contemporaries with justice to his memory. It has been too full of activities, in a professional sense, for more than a half-century, to be compassed in a few lines. Men die and their works live after them to enlighten and encourage those who have attempted to follow in their footsteps. Vain endeavor to be similarly gifted, for as no two are alike personally, so no man can be equally endowed, mentally and physically, with any other man.

Dr. Taft occupied a position in dentistry, if not original, at least unique in its character. He was not a devotee of what is termed scientific investigation; indeed, it may be doubted whether he was original, as that word is understood, yet he absorbed the

work of other men so thoroughly that he became known throughout the country as an educator, with few, if any, equals. It was from this standard that his work must be judged. His life was so full of activity that the writer finds difficulty in realizing that Dr. Taft enjoyed a national reputation when he was a student, yet only ten years had elapsed since Dr. Taft had opened an office in Ripley, Ohio, in 1843.

Dr. Taft was not one to enter into warm disputations. His life was too serene, and his religious nature avoided the tempestuous conflicts that frequently disturbed the annual dental gatherings. He doubtless realized that storms and tempests are transitory and would end with a serener sky, and for this he could patiently wait. He was, therefore, never a partisan.

During the entire life of the American Dental Association he was a recognized authority. As far as the writer is aware, he never missed the annual gathering of this body, no matter how far the meeting might be from his home. When that body closed its work at Old Point Comfort, Dr. Taft, with much feeling, bid that body a long farewell. It had been his professional home for many years. One after another of his associates had passed to the life beyond, and while this body was to be reincarnated, as it were, into a new organization, he, with others, felt that he was too advanced in years to build up new associations. Notwithstanding this, he entered energetically into the work of the new organization, the National Dental Association, and has attended every meeting, including the last at Asheville, N. C.

He was one of the original organizers of the National Association of Dental Faculties, and has participated in its work up to the present year.

He took an early and active interest in dental education, and organized the Dental Department of Michigan University, and remained its Dean until the close of last session. It is not the time or place to traverse the action of this University in displacing him from the position he then held. Universities, like other large bodies, are not always grateful.

Dr. Taft, as a writer, did much to mould dental thought, but his work in this direction seemed rather the expression of other men's minds than that of his own. He failed to keep his work on "Operative Dentistry," first published in 1859, up to the standard of the passing years, and it was replaced by the text-books of other

writers, but when first issued, and for a long time thereafter, served as a guide to the inexperienced student.

His nature was lovable and earnest. His whole life was devoted to his profession and his religious duties, and this he has left to those who still work in the ranks as a precious heritage. If his true professional spirit could enter into the life of dentistry to-day, how much better it would be for all who claim to be members of it as a profession. He belonged to a class of whom, unfortunately, we have too few, and the few are not appreciated.

While Dr. Taft had reached the limit of age ordinarily given to man, and while we cannot mourn his departure as we would the young, yet the world, and especially the dental world, has reason to regret that such as he cannot remain a blessing and an example to those most in need of such a gracious life. He was a warm friend, and as such the writer will miss him as the days go on, but with unfailing trust in the future that as men die men will live, and in the future the world will come to realize that death and life embody the idea of eternal progress.

The death of Dr. Taft was announced as this number was being prepared for the press, and therefore detailed notice of his life and work must be left for the December number.

Bibliography.

A DICTIONARY OF MEDICAL SCIENCE, containing a Full Explanation of the Various Subjects and Terms of Anatomy, Physiology, Medical Chemistry, Pharmacy, etc. By Robley Dunglison, M.D., LL.D., late Professor of Institutes of Medicine and Medical Jurisprudence in the Jefferson Medical College of Philadelphia, etc. Twenty-third edition. Thoroughly revised, with the pronunciation, accentuation, and derivation of terms. By Thomas L. Stedman, A.M., M.D., Fellow of the New York Academy of Medicine. Lea Brothers & Co., Philadelphia and New York, 1903.

The presentation of a twenty-third edition of Dunglison's Dictionary carries the mind back so far in the history of medicine that probably very few are sufficiently advanced in years to remember

the earlier editions of this great work. The reviser says of it, "A book which has held its own through twenty-two editions for nearly three-quarters of a century needs no apology. . . . It has become an institution, and the only office of the present editor is to tell what liberties he has taken with the work of the author, and why."

The reviewer has before him the third edition of this dictionary published by Lea & Blanchard in 1842. In the preface of the second edition, republished in the third, the author, Dr. Dunglison, says, "The author's object has not been to make the work a mere lexicon or dictionary of terms, but to afford under each a condensed view of its medical relations, and thus to render the work an epitome of the existing condition of medical science." This original idea of the author has been faithfully followed in each successive edition until the present, and the student of the history of medicine can readily follow the steps of progress made, for nothing so marks this as the new words added to indicate new phases of the science as they have appeared from decade to decade.

Turning to the third edition of 1842, the word *bacillus* has no place, or bacteriology developed out of this. Probably no single word more prominently represents the progress made in Medicine than this. In the twenty-third, the present edition, some fifteen double-column pages of text are devoted to this subject, and four pages of illustrations. That which is true of this word is measurably so of other terms. The reviser states that it has been found necessary to add new terms "varying in number from several hundred to several thousand."

Among the words that have required more extended definition is that of *Anæsthesia*. In the 1842 edition the definition of this word is confined to "Privation of sensation, and especially that of touch. . . . It may be general or partial." This edition was published two years before Wells discovered the anæsthetic properties of nitrous oxide and gave a practical illustration of it, and four years prior to Morton and Jackson's experiments with ether. The definition is practically that given by Gardiner in his 1847 dictionary, and also the older dictionaries; as, for instance, Parr's Medical Dictionary, 1819, defines the word in the same way as those quoted. This definition dates back to Cullen, and was not practically changed until *anæsthesia* meant reduction of pain by inhalation. It is a curious fact that a very general impression prevails that this word was introduced by Dr. Oliver Wendell Holmes at the time ether was

introduced. Holmes does not claim it, for he alludes in his letter, 1846, to Cullen and Linnæus in this connection, but he evidently had doubts of the propriety of applying this word in the modern sense, for he recommends Morton to consult with certain "accomplished scholars, such as President Everett or Dr. Bigelow, before fixing upon the term which will be repeated by the tongues of every civilized race of mankind."

The reviser has been careful to include words used in dentistry, and an examination of these gives, upon the whole, satisfactory definitions, although, in general, these might have been extended to advantage in a somewhat similar manner to those regarded of importance in medicine. In illustration, under "Dental" many of the instruments used in dentistry are described so briefly that one not familiar with the subject would have some difficulty in determining their use; for instance, the word "Dental model." It is defined as a "plaster cast which is to be accurately reproduced in other material." This will strike the average dentist as absurd. For one not conversant with the use of a model it may be necessary to add that it is simply a form reproduced from an impression of the mouth, which in its turn is used to form a plate for the mouth upon which to attach teeth; in other words, to produce an artificial denture, or for other mechanical appliances.

The reviser has introduced the word "morsal," meaning bite. This has not been generally adopted in dentistry, and probably will not take the place of occlusal, now generally used to convey the same idea.

Those who have regarded Dunglison's Dictionary as a medical authority, and have revered it not only from long association, but for its intrinsic value, will have this long-time regard strengthened by reference to this edition. The reviser has performed his part of the work very satisfactorily, and although there are now many dictionaries of words used in medicine, and all of them of very great value, this will hold a place second to no other in the library of the practitioner, or in the daily work of the student in general medicine or of any of its branches.

The publishers have made this work more valuable by carefully prepared illustrations and have also made reference easy by marginal lettering.

Current News.

INSTITUTE OF DENTAL PEDAGOGICS.

FOLLOWING is the programme of the meeting to be held in Buffalo, December 28, 29, and 30, 1903, at the Iroquois Hotel. All interested in education and the elevation of the standards of the dental colleges and students are very earnestly requested to attend this meeting.

President's Address. "Some Faults of the Prevailing Dental Training." By Dr. J. D. Patterson, Kansas City. Discussion to be opened by Dr. John I. Hart, New York; Dr. B. Holly Smith, Baltimore; Dr. H. P. Carlton, San Francisco; Dr. Geo. E. Hunt, Indianapolis.

Prosthesis. Two papers. (a) "Methods of teaching the Artistic Elements of Prosthetic Dentistry." By Dr. A. O. Hunt, Omaha, Neb. (b) "Methods of teaching the Anatomical Arrangement of Teeth." By Dr. B. J. Cigrand, Chicago. Discussion to be opened by Dr. N. S. Hoff, Ann Arbor; Dr. G. H. Wilson, Cleveland; Dr. R. R. Freeman, Nashville; Dr. F. H. Berry, Milwaukee.

"An Ideal in Pathology." Paper by Dr. D. R. Stubblefield, Nashville. Discussion to be opened by Dr. H. A. Smith, Cincinnati; Dr. T. B. Hartzell, Minneapolis; Dr. A. H. Peck, Chicago; Dr. O. L. Hertig, Pittsburg.

"Orthodontia Technology." Two papers. By Dr. S. H. Guilford, Philadelphia; Dr. C. S. Case, Chicago. Discussion will be opened by Dr. W. E. Grant, Louisville; Dr. A. E. Webster, Toronto; Dr. H. B. Pullen, Buffalo; Dr. H. T. Smith, Cincinnati.

"The Value of Instruction in Dental History and Literature." Paper by Dr. J. Taft. Discussion to be opened by Dr. H. L. Ambler, Cleveland; Dr. Charles McManus, Hartford; Dr. J. H. Kennerly, St. Louis; Dr. B. J. Cigrand, Chicago.

"Porcelain Technology." Paper by Dr. H. J. Goslee. Discussion to be opened by Dr. J. Q. Byram, Indianapolis; Dr. Ambler Tees, Philadelphia; Dr. L. E. Custer, Dayton; Dr. H. L. Bانشaf, Milwaukee; Dr. J. F. Ross, Toronto.

"The Dental Curriculum." Paper by Dr. Geo. E. Hunt, Indianapolis. Discussion to be opened by Dr. G. V. Black; Dr. J. B. Willmott.

"How shall Quizzes be conducted?" Symposium by Dr. F. D. Weisse; Dr. R. H. Nones; Dr. L. P. Bethel.

Exhibition of recent teaching appliances. Dr. W. G. Foster, Baltimore; Dr. L. S. Tenny, Chicago.

W. H. WHITSLAR,
Chairman Executive Committee.

AMERICAN SOCIETY OF ORTHODONTISTS: A CORRECTION.

THE meeting of the American Society of Orthodontists will begin on Thursday, December 31, 1903, instead of on Wednesday, December 30, as previously published.

The meeting will be held at the Iroquois Hotel, Buffalo, N. Y., and a most interesting programme has been prepared.

ANNA HOPKINS,
Secretary.

THE FRATERNAL DENTAL SOCIETY OF ST. LOUIS, MO.

WHEREAS, The Fourth International Dental Congress, which is to meet in St. Louis, August 29 to September 3, 1904, under the auspices of the Louisiana Purchase Exposition, is to be the greatest event in the history of dentistry; and

WHEREAS, As the Fraternal Dental Society of St. Louis is progressive and stands for the best in dentistry and its interests; therefore be it

Resolved, That the Fraternal Dental Society of St. Louis heartily endorses the Fourth International Dental Congress, and tenders it their aid and support as a society and as individuals.

W. J. WHIPPLE, *President pro tem.*
E. E. HAVERSTICK, *Secretary.*



J. C. Yapt. M. C. W. D. S.

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Original Communications.¹

CASES OF MAXILLARY SINUS DERANGEMENT.

BY PERCY R. HOWE, M.A., D.D.S., BOSTON, MASS.

OF the accessory sinuses of the nose, the maxillary sinus is by far most frequently the seat of inflammatory affections. This is in part due to the relation of the teeth to this cavity, and therefore has always been regarded as a subject of great interest and importance to the dental profession. Within the last few years the research of eminent specialists has added much to our general knowledge of this branch of science, and at the same time shown many other sources of infection, as well as the anatomical construction which permits of such infection. The works of Dr. A. Logan Turner, of Dr. Cryer, Lindenthal, Weichselbaum, and E. Frankel are among the most important on this subject, and present facts with which the dental practitioner should be familiar.

In attacks of coryza, influenza, pneumonia, scarlet fever, and diphtheria the mischief to be expected is that the sinuses will be infected by the specific bacteria of these diseases; for these have been discovered in these cavities, both in living subjects and in

¹ The editor and publishers are not responsible for the views of authors of papers published in this department, nor for any claim to novelty, or otherwise, that may be made by them. No papers will be received for this department that have appeared in any other journal published in the country.

cadavera. Lindenthal finds the influenza bacillus present in the sinuses of many subjects that he has examined, and he believes that this is, of itself, sufficient to produce pus; so that it may be accepted as a settled thing that inflammation and suppuration of the sinuses are much more common than was formerly supposed, and present themselves either in an acute or a chronic form.

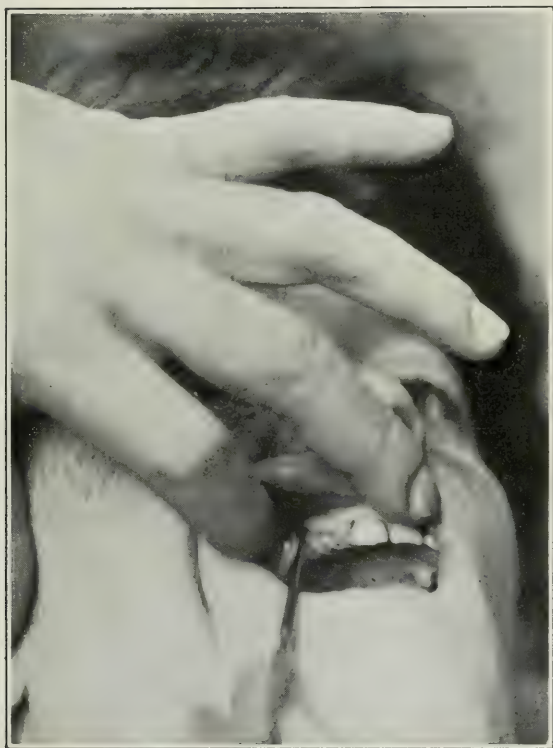
In many cases the ostium of the affected part remains patent, the secretions drain off, and a spontaneous cure takes place; but severe trouble may arise if the ostium becomes closed by reason of the swelling of its mucous membrane. Post-mortem examinations have shown that from twenty-five to forty-five per cent. of unselected cases have pus in the sinuses. Although this may be in part a result of the fatal diseases, yet investigators feel warranted in saying that a large per cent. of diseased sinuses remain without treatment because unrecognized.

Dr. A. Logan Turner tells us that pus may be secreted for months, and even years, in one of the accessory sinuses with almost entire absence of pain or swelling to suggest the existence of such an unhealthful and inflammatory condition; and hence we get the term "latent empyema." The symptoms of chronic suppuration in the sinuses are nasal discharge, cough, dryness of the throat, huskiness of the voice. Indigestion may also result from an enforced swallowing of the offensive secretion.

Impaired vision is not as often met with in maxillary sinus suppuration as it is in disease of the ethmoidal and sphenoidal cavities; however, orbital complications may also occasionally accompany maxillary sinus disease and the cause not be suspected. One of the cases that I have treated was of this nature, and I have ventured to give an account of it with some others.

CASE I.—The patient, a young lady seventeen years of age, came to me for dental work. On examination of her mouth, I found the teeth missing in the right superior maxilla, with the exception of the right central incisor and the point of a tooth protruding high up and back in the canine fossa. The latter was movable, and with probe and fingers was easily taken out, disclosing a free opening into the maxillary sinus. The tooth itself was an undeveloped cuspid with the root absorbed, having the appearance of an exfoliated deciduous tooth. The sinus was high-vaulted and large, especially for the age of the patient. Its walls were intact, and gave to the probe no evidence of a carious or necrotic condition. The

FIG. 1.



CASE I.—Opening in sinus.

thin nasal wall, which, it will be remembered, has in certain instances been declared to be membranous, seemed hard and firm, as did also the orbital plate.

By means of an ear speculum and reflected light it was possible to examine visually this cavity sufficiently to see that, while there was no evidence of pus, the mucous lining had anything but the thin, light-colored appearance of a sinus in a normal condition. Thickened, congested, and sluggish, it gave undeniable evidence of having at one time been the seat of intense infection and inflammation. The ostium maxillare was also of a large size, as evidenced by the ease with which fluids passed from the sinus into the nose during syringing.

The right eye was nearly sightless, the patient being scarcely able to distinguish light from darkness. Five years previous to this time she had suffered excruciating pain in this region, and had been under treatment of a physician, who had referred her to a prominent eye specialist, but the cause of the trouble escaped his detection. The sight gradually failed and the pain subsided.

When this side of the patient's face was causing her intense pain, she had had teeth extracted in hope of getting relief. These extractions cleared all her superior teeth on the afflicted side except those already mentioned. With the exception of a few simple cavities, her teeth on the left superior maxilla were intact, and her inferior teeth as well.

Treatment of the sinus by enlarging the opening, curetting the walls, packing with sterile gauze, followed later by gentle flushing with a boracic acid solution, has much improved the condition. The opening has closed and the eye recovered to such an extent that, with the aid of proper glasses, the patient is able to read ordinary print.

The appearance of the eye is almost normal, although the cut may convey a wrong impression concerning it. To show the nicety of the closure effected was my idea in having this photograph taken. (See Fig. 1.)

CASE II.—The patient is a young lady twenty years of age. When seen by me she had a temperature of 103°, rapid pulse, and was suffering intense pain in the left side of her face. By her physician's advice her teeth had been twice examined by her dentist, and had been pronounced sound. When I examined her mouth, a slight soreness of her superior left wisdom-tooth was apparent,

and the nasal wall was also sore and swollen. No discharge into the meatuses of the nose had been noticed.

Although the symptoms were not as decisive as they might have been, the severity of the suffering and the general febrile condition of the patient were sufficient proof to me that the sinus was affected and that an opening into it was indicated. Inasmuch as the wisdom-tooth was sore to percussion, I concluded that this was the nearest approach to the seat of the trouble, and accordingly extracted it and through its socket entered the sinus. This was found to be intensely inflamed. Douching with the boracic acid solution reduced this inflammation, caused the pain to cease, and in a few days ended the whole trouble.

This case seemed to have some peculiar characteristics. It seemed to be infected from causes other than the teeth; and yet there was no catarrhal state, no coryza, no malaise condition of the patient to which this trouble could be attributed. The teeth were perfect, the mouth had had the best of care, and was as cleanly and hygienic as could be desired. It is of interest to note that the patient's mother had been operated upon twice for pus in the mastoid cells.

CASE III.—Mrs. D., aged forty-five years, had long been troubled by a fetid discharge from the nose, and had been under continued treatment for nasal catarrh. The teeth were sound. Examination of the nose showed pus in the middle meatus; and after cleansing and trying the posture test for a few minutes, the presence of more pus was observed on the affected side. Opacity in the region of the antrum, in response to illumination of the face, convinced us of the location of the trouble. An opening through the canine fossa was effected, the teeth being *in situ*, through which a considerable quantity of offensive pus was evacuated, as we had anticipated. Treating by lavage for a considerable period, a cure was gradually brought about; at least, after two years, the patient has complained of no further trouble, and her catarrh has so subsided that she is no longer conscious of it.

CASE IV.—This was the case of a man who had been previously but unsuccessfully operated upon,—a man fifty-five years of age, who, having lost his teeth, was wearing an artificial plate. A large opening had been made into the antrum and a drainage-tube inserted. So far as we might judge from appearances, a permanent state of infection existed. For eight years this gentleman

had been douching and syringing this cavity and taking most particular pains to keep this part in an antiseptic condition.

This case was not mine to prescribe for, but the patient wished me to examine his mouth. The treatment employed and the resulting condition of the patient's jaw seemed worth describing, inasmuch as this seemed only a fair representative of too many cases of this kind which we have seen, cases which have led us to be no advocate of large openings, irritating washes, rough curettages, or the insertion of mechanical devices for drainage. Such methods defeat the very ends which they aim to attain. Here was a need, a treatment, but no cure.

On operative procedure in such cases much has been written, but individual conditions must always govern our choice of methods, and not hard-and-fast theories. If an opening through the canine fossa is deemed best, let there be a clean incision from the canine eminence to the molar process of the superior maxillary bone, a lifting back of the periosteum, and an opening drilled a trifle larger than a lead-pencil. For curettage, if necessary, the use of a flexible, ringed, nasal curette is very convenient. An opening through a tooth-socket may need to be a little larger on account of the thickness of the tissue from the gingival margin of the alveolus to the floor of the sinus, but it should always be made with the idea of eventually effecting a closure of the parts.

Bleeding is controlled with throat and cheek sponges, with packings, and with adrenalin chloride. The after-treatment can be with aseptic gauze, changed when necessary, or by the more common lavage treatment.

"WE MADE BETTER DENTISTS THEN THAN NOW."¹

BY D. R. STUBBLEFIELD, M.D., D.D.S., NASHVILLE, TENN.

THIS startling quotation is from one of the best men in American Dentistry. For more than twenty years he has been admired as a man, a teacher, and a dentist, one whose life traditions gave warrant of excellent ability, whose aspirations considered the highest attainment only as worthy, and whose associations argued

¹ Read before the Academy of Stomatology, Philadelphia, March, 1903.

conclusively that his profession might look upon him with confidence and pride.

The occasion of the utterance was a meeting of teachers of dentistry, and the special subject of discussion was the practical adjustment of the work of the schools to the new order of things which now confronts us as a profession. I say *confronts us as a profession*, for it seems all but axiomatic to say that the profession must be vitally concerned in everything connected with the institutions which educate its rank and file. The old men must jealously guard and wisely counsel them, and the young men must loyally defend and enthusiastically encourage them, for no profession can hope to rise above the fountains from which its current flows.

On the above occasion it had been claimed that the addition of another college year gave a much needed opportunity to add certain and sundry important phases of modern scientific knowledge to the college curriculum. The enthusiast who proposed had been followed by others, until the roseate dawn of a newer and better era in dentistry was flung upon the imaginary canvas of our professional East and the kindling enthusiasm of the moment was beginning to spread like any other conflagration. Then it was that this certain man spoke among other things the sentiment which has been considered worthy of your interest to-night. He is no sentimentalist. He said what he did from no desire to detract from the dignity and worth of what is done to-day, from the stand-point of intrinsic scientific value, but he gave the sober judgment of a thoughtful mind. For more than twenty-five years he has satisfactorily filled the demands of an intelligent, progressive teacher, and from this eminence, this coign of vantage, having surveyed the whole field, he uttered the conviction that *better dentists were made in the past than to-day*.

Is it true? Is it only partly true? Or is it without foundation in fact? Do you young men believe that those who preceded you came upon the field of professional life better equipped, better able to discharge its duties, than you who may rightly claim to be the exponents of a later, more progressive *régime*? In the light of this day of boasted scientific inquiry and investigation it is a bold, if not a rash man who can utter such a sentiment. But, again, I declare that the man who said it is worthy of your confidence; in truth, that man holds your confidence to-day, and

is entitled to that distinction from every single step between sentiment and sense.

I come, therefore, demanding the right of trial by jury, demanding a hearing for the reason of his faith. This question is too vital to the profession to be left unanswered. Although it is unthinkable that any living profession can ever become fixed and unalterable, crystallized in one state from which there can be no change short of constitutional disintegration, at the same time, right now the supreme legislative body of our institutions of instruction has demanded a change which must shake the methods of our colleges to their foundations. It behooves us, therefore, to reason together, to listen to each other in the utterance of honest convictions, to reserve judgment until all of the evidence is in, and wisely decide our future course. In the language of another, "Whilst yet the storm thunders in the distance let us sound the waters beneath us, ascertain our true position, and determine our future course." From this Academy of Stomatology, from this great city, one of the acknowledged centres of professional confidence, must come some declaration to assist in making a wise, even a monumental professional conclusion.

If you should say this is no affair of ours, that it is a question that the colleges alone must answer, you reckon without your host. The college is nothing but the concrete exponent of what the profession at large demands. Whether a man wishes it or not, when he enters a profession right then he assumes its obligations and cannot shut his eyes nor close his ears to its claims upon him. Therefore I reassert that, whether you wish it or not, whether you were conscious or not in assuming it, you have constituted yourself the sponsor of your professional schools by assuming the obligations of your chosen calling. The college is and has been just what you demand it shall be. It is no more perfect, nor infallible, nor worthy of praise or censure, than you yourselves, for it is bone of your bone and flesh of your flesh. Therefore, the condition, the demand, that confronts it confronts you, and you must help to carry the praise or odium of its wise or unwise solution. Shall more time mean, also, more material in the course? Shall it be interpreted as an opportunity to more thoroughly digest what is already crowding the curriculum? Is this the time to take stock of our methods, to scrutinize the claims of each part of the composite course, to readjust instruction with reference to

relative time in the course, fitting it more accurately to the maturity of mind of the students engaged? One man has spoken, let others speak out. In the multitude of council we may get wisdom.

But before others may have the floor, what can be said about this proposition that "We made better dentists then than now"? If he is correct, a clear understanding of his reasons for belief may be of much value in settling the problem of the four-year law. For the purpose of this discussion let me assume the responsibility of his utterance and offer myself awhile, at least, as the victim upon the altar of investigation. I say this in sound mind and disposing memory, with a full consciousness of the enormity of the offence and with a just apprehension of the dire fate that may await me. The sergeant-at-arms has been duly instructed to lock and bar the doors from the outside, and no man of you can escape hearing this suicidal confession, even if it causes the marrow of your bones to freeze and the hair of your flesh to stand up with chilling horror. I am determined to do it, even if I, reportorially, scatter my brains and spatter my heart's hot blood upon your innocent heads. I, who am about to die, salute you!

In all seriousness, hear his cause. There is some foundation in fact to the claim that better dentists were made in other years than right now. From the stand-point of an interested observer for almost a quarter of a century, I am ready to believe that the modern introduction of so much or so many varied branches of science has tended to obscure the clearness of sight and definiteness of grasp upon the great fundamental idea of all dental instruction. It may be asked, Do you mean to antagonize progress and modern scientific development? Do you attempt to deny that the wealth of scientific contribution to the course of instruction has enriched the minds of those upon whom it has been lavished? If not, how can you hope to maintain such a conclusion that is all but iconoclastic in its effect upon that awe-inspiring pile of knowledge, otherwise known as the up-to-date dental college curriculum? I cannot deny its richness, its wealth of scientific attainment, and for that reason I do not make my vicarious substitution unconditional. But I do claim that such profundity of knowledge, such wealth of science, do not necessarily give the coming dentist a commensurate degree of excellence in rendering practical the golden idea of greatest fundamental importance and make him of necessity the ideal exponent of its greatest beneficence to mankind.

To my mind, the cart is before the horse. If such extensive acquisition of scientific knowledge could be made to exert its enriching power before the student has set himself to acquire that perfect technic which alone can make him the ideal practitioner, it would be better. Then the proper relation between scientific learning and practical performance would be better established. Then the student would, indeed, be more able to see broadly and decide maturely the application of means to ends and the scientific reason for them.

If it be true that the introduction of even valuable material may obscure the vision or the practical simplicity of the end aimed at, then I hold that the instruction of other years which was not interfered with by what may be called an embarrassment of riches was able to produce a stronger, clearer practitioner than the graduate of to-day can possibly claim to be at the outset of his career. A practitioner of any calling is essentially a *doer*. It is, *therefore*, unthinkable that any exponent of a practical utility can be unable to do, to make, to accomplish. This idea could be illustrated in every field of human enterprise, but the bare statement of it here is sufficiently axiomatic for our purpose. Just so long as the college course held as its highest, if not its only ideal the attainment of power to do, it was naturally productive of a better development in that direction. At that time its appropriation of really valuable knowledge from cognate sciences, was dominated by the ruling idea of perfect practicality. Such outside influences, if they did not obviously better it, were not allowed to attain to anything like a dangerous extent from the stand-point of that practical end in view. If I may use a homely figure, just so long as these scientific outsiders were used as condiments or flavoring extracts, they contributed to the general good effect of the whole, but when they became, or were dangerously near becoming, a preponderating component, they spoiled the whole pudding. As long as philosophy was confined to the definite attainment of the *know how* and the *do*, philosophy was an aid and not a hinderance, but when the course became inundated, as it were, with philosophy, the picture of the ideal was greatly obscured. If I may be pardoned, I believe I can make my meaning clearer by a personal illustration. My teacher of physiology was a most erudite man, so full of physiology and other sciences that to save his life he could not restrain himself to the bare, simple principles of physi-

ology which my crude mind could hold and digest. From his stand-point he adequately covered the field and filled the measure of demand so full it overflowed at every side. He was absolutely drowned in the flood of physiology and all other *ologies* that inundated his mind. But one poor student found in a modest quiz-master, who only knew the headlines, the landmarks, the great and simple facts that beacons the land of Physiology, his only salvation. The quiz-master knew only just enough to get to the end and go back again, refreshing the mind with the reiterated principles until all the salient facts of that most beautiful branch remain in my mind to this day like a twice-told tale. There you have it. Just so long as the teachers of dentistry had clear minds to teach the essential ideal of making a dental *practitioner*, just that long were they able to impart definite instruction which comparatively untrained minds could and did grasp and digest. In this connection, did it ever occur to you what the actual average of mental training among dental students is, or, more properly, was? The absolute, even sublime confidence with which the American dental student has always believed himself fitted to study any profession when he had got his own consent, is one of the enigmas of psychology. As I have already ruined my character, so to speak, I might as well utter another heresy, and that is, that it is a sacred tradition among the profession that every man is able and ought to criticise the dental colleges and be always willing to admit his own ability to flood with light all the dark problems that utterly confound and confuse them. Let me suggest that the man who belittles the colleges, as a rule, needs to take a course at one, or, at least, is ripe for a short post-graduate course. Can you make bricks without straw, or a silk purse out of a sow's ear? No; it is not that they do so little or so poorly, but the wonder is that they do so much with the material that you—the profession—send them.

To return to our mutton. I say it is no reasonable claim that the comparatively simple course of the earlier years was more appropriate to the simple and untrained minds which presented themselves at college, and, unless it can be clearly proved that the cultivation of the material now in the classes has proportionately improved, that the more complex courses, filled to bursting with excellent things, are still beyond the mental assimilation of the average student. There has been much improvement educationally,

but not enough yet. The classes have grown younger and therefore more impressionable, which is a distinct gain, but receptivity of mind, engendered by training, must be attained before the best results can possibly be obtained.

Another point in our discussion. The mental attitude of the student has changed in late years. This is hard to prove, for so many personal exceptions suggest themselves that the mind cannot accept the principle broadly. In the earlier years, when there existed in the mind of the world the idea that dentistry was not quite as respectable as some other callings, the ranks of dentistry were recruited by those whose minds were more strongly directed than those of to-day. They answered, if you please, an outcry of their nature; they became dentists because they wanted to be dentists more than anything else in the world. To-day we have many who come into college because some single exponent known to them is supposed to be prospering greatly and yet can claim no superiority to them, who may be at the time "working themselves to death for nothing." This line of thought has been for quite a long time interesting to me, and if it were worth while many practically conclusive cases could be cited to prove its correctness. Now, everybody knows what the mental attitude means in the doing of anything. Did you ever hear of the forced march at night by the army of Northern Virginia, when the sticky clay fought with all its might to help the rebels hold back the advancing host? Did you ever hear that when mind as well as body was worn out, when sleep and rest seemed not only the greatest imaginable boon, but also the absolute necessity of the hour, that the band could change those dragging dead men into dancing figures, instinct with life and strength? That is a fact that has been often proved in the life of every man. The mental attitude of the self-elected, who listened to the outcry of nature, is infinitely superior to those, even better educated and more pliable of mind, who are actuated by a motive no higher than a commercial basis. If this is true, it can not be entirely unreasonable to claim that the average professional practitioner was better from that other *régime* than the average graduate of to-day who may be admitted to be a much fuller man. We cast no reflections upon the intrinsic worth of all scientific knowledge. We would not if we could say or do anything to minimize the just estimate placed upon the wonderful reaches of modern science. We would not have it thought that we

would undervalue the great benefit that dentists may obtain from such broadest cultivation. The intelligent practitioner of dentistry cannot be too broad-minded nor too far-seeing to meet and solve the protean problems which daily confront him. The question is not how much has been supplied to him that was valuable, but rather how much knowledge has become the most wisdom to him? Knowledge is power, but it is only stored ammunition, passive potentiality; but wisdom is possibilities in action, mighty in effect for good or for evil. We must not measure nourishment by ingestion, but by digestion, and we would rest our claim, if we have any at all, for the correctness of my text upon the single idea that the average student in other days more nearly digested his course than is the case to-day. As far as this advocate is concerned, the proof is in and the jury has the matter for settlement. There is or is not some truth in the claim, and the prosecution has the opportunity to utterly annihilate the victim.

At the risk of outraging the unities, for fear of some mental reservations that may be formed or are in process of forming in your minds, I am going to say "what I have to say why sentence of death should not be pronounced upon me according to law." In the further language of Robert Emmett, "I have nothing to say that can alter your predetermination, or that would become me to say with any view to the mitigation of that sentence which you are here to pronounce and which I must abide by. But I have much to say why my reputation should be rescued from the load of calumny and false accusation that has been (in the last few minutes) heaped upon it." Therefore, and for that end, a few words will be pardoned. It will be recalled that I said that I had a growing conviction that the cart was before the horse in connection with our educational logic. It is but due to myself to make this a little clearer. As a practical teacher I have hailed each addition to the curriculum as another opportunity of value to the student. I have not always, however, felt certain that the practical value of the course would be necessarily increased by such valuable extension. The value is there,—that I did not question,—but I could not feel certain that its full cultural possibility would become tangible. Personally, I have been a stickler for broader, better education as the best foundation upon which to erect the superstructure of any professional equipment. Good education, however, is not measured by number, or length, or complexity of

the courses, but by results, by increased power to think, by the cultivation of the powers of the mind, whether that has been accomplished by college methods and courses or not. The ability to grasp easily what is presented, to understand the teacher readily, not only as to what is said but what is meant, may be largely a matter of personality, but leading out the mental powers by education more certainly achieves that than anything else. Such skilled intelligence is what I have longed for and even hoped for in our classes. But now that condition of mental parts is most usually if not better obtained from collegiate instruction, and for that reason I have exulted when I saw that the trend of the action of the National Association of Dental Faculties was towards more definite educational instruction. Let me again use a homely figure. We may have the best seed as to quality, variety, and adaptability, and we may have in addition soil that promises the best results, but no farmer would hope to reap a harvest if he did not carefully prepare the ground. On the other hand, with thoroughly prepared earth fair results may be obtained even if it must be confessed that the farmer himself was not the wisest. The point I wish to make is that if we, the profession, can help the schools to so present the various subjects of the course, with especial relation to the preparation of the average student to understand the value of each part, this four-year law will certainly bring a great uplift to our professional future. Let us emphasize the importance of maturely weighing each branch and then intelligently placing it in the logical sequence of its relative importance to our scheme, and we shall greatly assist the cause of professional education. If we examine critically, we can show, I dare say, that most of our courses have become heterogeneous aggregations of material good enough in itself. The fault is rather in the lack of system, lack of logical sequence, rather than lack of satisfactory substance. Education-building is not altogether dissimilar to house-building so far as methodical sequence is concerned. It would be the grossest folly to attempt to put a part of the roof in the foundation, or, as I greatly fear we have been compelled to attempt to do, try to build the professional roof without any foundation under it. I would not have you suppose I undervalue the actual improvement of the course in the twenty-four years of my effort to teach, but in this heart-to-heart talk with you I want you to know that I have sometimes feared we were not getting the best results pos-

sible out of the opportunities we did have. This is said with special reference to those additions from the correlative sciences. With reference to those developments along the line of technic or the manual training in the art of dentistry, there can be no discussion. The inner consciousness of every single older dentist tells him that all of that most excellent practical cultivation would have been an inestimable boon to his young professional years. But I speak of those branches which from a broad scientific standpoint lend a distinct cultural insight into our special field of interest. If we could get all the maturing of mind and the training of intelligence desirable from their broadening influence, then all could build confidently; then we should reap the richest harvests or feel ourselves to blame for the deficiency.

This is the message I bring, a plea for a more logical rearrangement of the present curriculum, and thereby obtain a better use of all the excellent materials collated there, to the end that those entering our profession may, in fact as well as semblance, be *educated men*. Time is a very important factor in material digestion, and should not be deemed less so in the question of perfect educational assimilation. The failure to obtain satisfactory results is generally due to more than one cause. Starvation is most horrible when it is attended by the tantalizing association of copious ingestion of food, but it is possible. Therefore the addition of another session gives the assurance of a better opportunity than ever before to extract the full measure of professional nutrition from the courses in our colleges. Those with whom I am associated joined me in deeming the step to four sessions premature, but now that we have taken stock of our resources, we are determined to make the best effort possible to do better than ever. We are girding up our loins to meet the inevitable with the full consciousness that the schools stand committed to the new policy and should not back down without a manly effort to sustain its conclusion.

With the expression of my own personal opinion I beg to assure you that I am fully aware the last word has not been said. If, perchance, I have proved myself *flint* enough to strike the *spark* from you that shall light the torch of full, convincing, rational conclusion, I shall hold myself repaid better than I can adequately tell you. With this hope, I pray you to accept my thanks for your attention.

TREATMENT OF DECIDUOUS MOLARS.¹

BY DR. G. E. ADAMS, SOUTH ORANGE, N. J.

MR. PRESIDENT AND GENTLEMEN OF THE INSTITUTE OF STOMATOLOGY,—The question of treatment of the deciduous teeth is one of vital importance, as these teeth should be held *in situ* until forced from their places by the newly erupting ones.

In the early days of dentistry the deciduous teeth were thought to be of so little importance that they were allowed to decay and were extracted before they had fulfilled one-half of their function as regards time limit.

In a "Guide to Sound Teeth," published in New York in 1838 (Shearjashub Spooner, M.D., author), may be found the following:

"It often happens that the temporary teeth, especially the molars, decay at an early age, and expose the child to severe toothache. Under such circumstances, it is common to extract the painful teeth. We think the practice highly improper, as irregularities are often caused thereby; and that the temporary molar teeth should never be extracted for toothache unless it proceed from inflammation, ulceration, and the formation of gum-boils, in which case they should be removed for fear of mischief to the permanent teeth, which are being formed underneath them, as well as rid the child of pain incurable by other means. If the posterior temporary molar teeth be extracted, the first four permanent molars, which the child usually gets at six or seven years of age, will be very apt to come forward, so as partially to occupy their places. The consequence will be permanent irregularity, for there will not be room anterior to the permanent molars for the permanent teeth springing from the temporary incisors, cuspidati, and bicuspidi.

"As the incisors and bicuspidi come in before the cuspidati, the irregularity will be very apt to happen to the latter teeth, to remedy which will require the sacrifice of the four posterior permanent bicuspidi. We universally destroy the nerves of the temporary molar teeth, for the cure of the tooth in preference to extraction, and recommend the nurse to keep them stopped with gum mastic, or stop them ourselves with cement. The mastic

¹ Read before The New York Institute of Stomatology. June 2, 1903.

answers a very good purpose, as it is insoluble in water. The nerves of the teeth may be destroyed, as a general rule without pain and with least danger, by means of a very little arsenic, as will be seen under the head of 'Stopping and plugging the teeth.' Besides the prevention of the consequences before mentioned by the practice we recommend, the child often keeps these teeth highly useful for mastication."

Remember, gentlemen, this was written sixty-four years ago. In the treatise on extraction, by Professor Thomas C. Stellwagen, published in the "American System of Dentistry," we find the following:

"The deciduous tooth rarely needs to be removed until the permanent successor comes so near the surface as to be readily felt upon piercing the gum with a sharp needle. Teeth of the first dentition, even after severe injuries, will generally recover and serve their purpose until near the time of the appearance of their successors. Portions of the roots of the deciduous teeth denuded, as the result of wasting by absorption or by ulceration and sloughing of the overlying tissues, have frequently been cut off and their remaining ends polished to prevent their causing diseases of the tongue or of the soft tissues of the cheeks in contact with them."

So much for quotations. How frequently are our first services for the child called for when one or more of these deciduous teeth are giving trouble! We find on examination that the approximal surfaces are badly decayed, and possibly the pulps are putrescent, the youngster cannot eat without discomfort because of the pressure against the inflamed gum, and we hardly know how to decide for the best interests of the small patient. Shall we extract the teeth or attempt to conserve their usefulness for a while longer? The conscientious practitioner is sometimes halting between the necessity for retention and the fear of further trouble if they be retained, for the strain of the work, even though it be painless, is quite a factor to be taken into consideration. A little patient is brought to us, thin, pale and nervous, and we are told that it cannot eat, or will not because of the pain experienced, and after a day or two of trying to masticate, the child takes to prepared foods, as one child who ate nothing for several months but cereals and bread soaked in milk, but who after the insertion of a chloropercha dressing was able to eat what her brother and sister did. Examination reveals a growth, highly inflamed, extending to the occlusal

surfaces, and the slightest touch produces pain and hemorrhage, and we do not wonder that the child shrinks at the anticipated discomfort.

The initial step in such cases in approximal cavities in the first and second temporary molars extending to the gum, or when the inflamed gum has encroached upon the cavity, is the strangulation of the growth and making it possible to masticate with comfort. This can easily be done by first cauterizing the growth with carbolic acid and forcing a pledget of cotton saturated with chloro-percha into the cavity, for as the chloroform soon evaporates, a firm filling remains which will permit mastication for several weeks if necessary, although the longer it is left after two or three days the wider the separation and the more doubtful the future usefulness of the teeth.

The taste of chloroform in such small quantities is rather pleasant to children, and they frequently ask if they may have "some of that pink stuff." After the lapse of three or four days, the dressing being removed, the cavities may be treated as indicated.

The method of the writer in deciduous teeth with putrescent pulps is, first, the removal of all débris that is present as far as possible without cutting through the enamel, and inserting a small pledget of cotton saturated with Dr. Black's 1, 2, 3, composed of carbolic acid, oil of cinnamon, and oil of wintergreen, and filling the cavity with oxyphosphate or pink gutta-percha if the cavity be not too large. This gutta-percha may be added to from time to time, as it wears down, and the comfort of the little patient is maintained and mastication is assured.

Care is essential that the roots of these teeth be removed at the proper time, so as to guard against the eruption of the permanent teeth out of line.

It is incumbent upon the men of our profession to present to parents the necessity of frequent visits for examination, that the ravages of caries in the deciduous teeth may be retarded. These frequent visits eliminate the possibility of painful and protracted operations, and children grow to look upon the time spent at the dentist's with feelings of pleasure, and take the chair with cheerful and smiling faces; and the bugbear of the dentist is unknown.

SUGGESTIONS REGARDING THE OBLIGATIONS OF
THE DENTIST TO HIMSELF.¹

BY F. MILTON SMITH, D.D.S.

SOME time since it was reported that a well-known dentist of this country stated publicly that his first thought on examining a mouth is, "How much is there in it for me?" The writer does not believe this expression represents fairly the thought and purpose of a majority of practitioners. On the contrary, he is persuaded that the average dentist is desirous of doing the best he possibly can for his patient, and that with the minimum of expense, always remembering that "the laborer is worthy of his hire." That the average dentist would deliberately fill a tooth with gold when he believed gutta-percha or amalgam would do as well, simply because he could get a larger fee, the writer does not believe. Assuming, then, that the dentist has a higher ambition than the securing of gold for his coffers, let us consider some of the obligations under which he rests as regards his duty to himself; for if he shall be true to himself, and fair in his treatment of others, he should incidentally secure sufficient of this world's goods to supply the daily needs of himself and those dependent upon him, with some provision for a rainy day.

Since the close confinement of the busy dentist is not conducive to the best physical condition, it is his duty to see to it that the ill effects likely to result therefrom are counteracted so far as possible by every available means. If Drs. R. W. Varney and Marshal H. Webb had conserved their energies and husbanded their resources, they would probably both have lived years longer to have blessed humanity. They are, however, sad illustrations of a class of worthy men, too many of whom are found to-day, who are taxing themselves far beyond the point indicated by prudence and sound judgment. A very dear friend said to the writer some months since, "I have for ten years averaged ten hours a day for ten months in the year, besides setting up many nights till one and two o'clock writing." Another friend, whose appointment-book the writer looked over, is working almost every minute in the day from 8.30 to 5.30 or six o'clock, with a very few minutes for lunch.

¹ Read before The New York Institute of Stomatology, June 2, 1903.

The latter told the writer that he was considering spending his vacation time in undergoing, and maybe recovering from, an operation for appendicitis, with which trouble a prominent surgeon advises him he is suffering. The former gentleman has already undergone two or three very serious surgical operations, which in the opinion of the writer might have been avoided had he applied himself less closely to business. The dentist is likely to work more years if he works not more than seven hours in the day in the office, and takes a vacation of at least four weeks each year. Some will say it is necessary to work more than seven hours in order to make both ends meet. The answer would be, if one's time is fully taken up for more than seven hours, at certain fees, it would be wiser, judiciously to increase the fees rather than to work more hours. When a dentist has practised sufficiently long to have accumulated a practice that keeps him occupied steadily for seven hours each day, his time, if he has been faithful, should return him more than barely sufficient for his daily needs. In the opinion of the writer, one reason why the conscientious dentist is often unable to get along without working nine or ten hours each day is, the people have been taught that a bill should represent a certain number of cavities filled, with little or no consideration for that which should be compensated for beyond the other,—namely, professional skill and service. I will guarantee that there are good men in this room who would be actually ashamed to have the truth known as to the fees charged by them for such a service as is involved in properly treating and filling an abscessed tooth of three or four roots, to say nothing of cleansing and polishing, which, if properly done, is one of the most valuable services we can render.

Your essayist has many times been surprised at the amount of hedging that is seemingly done in the matter of fees. In many cases a charge of next to nothing is made for what the dentist knows is the most valuable service he has rendered, with a compensating charge of five dollars each for filling six small cavities with gold; the gold fillings having taken less time to make, and infinitely less skill, than the service for which no charge is made. It would seem more honorable and self-respecting to say to the patient, if items are given at all, "The treatment of the abscessed tooth costs you thirty dollars, the gold fillings I will make you a present of." While the writer does not always succeed in con-

vincing a new patient that he is not a highway robber, he does try to convince him that his bill is for honest professional service, and not for a few pieces of gold-foil. He believes this is one of the principal obligations a dentist is under to himself and to the profession.

The writer has no warmer friends nor more appreciative patients in his practice than those who have submitted to be treated in a strictly professional manner in this respect. They are saved the annoyance of remembering how much the last gold filling cost, and comparing it with the size of the one put in to-day. They can, indeed, some of them, make out their own bill when they leave the chair. The writer does not believe he could do a beginner a better service, in its bearing upon his whole life from a business standpoint, than to persuade him to make his charges upon a time basis, even if he finds it necessary to make his fee as low as one dollar per hour to begin with. The system of charging by the cavity seems to the writer most pernicious in its effects. The young man who does it will need to be of unusually good moral fibre if he does not at times place three or four small fillings where a single substantial one should be made.

Were it not for the fact that one of our best men said to the writer some time since, "I charge by the hour, but do not let my patient know it," the matter would have received less attention. The writer has sometimes wondered whether older men than beginners do not put amalgam in some large cavity because their fee, as announced by the cavity, is not sufficient to compensate them for time spent in making a large gold filling.

Returning, however, to the duty of the dentist to care for his health, we would suggest the wisdom of looking carefully after the eyes, which to him are so important. The writer for years labored under an unnecessary burden in working without glasses while suffering with a pronounced astigmatism, the existence of which he was totally ignorant of until he found that a full day's work exhausted him far beyond that which it should at thirty years of age. As he now remembers it, a word of caution in an article by Dr. S. G. Perry first aroused his suspicions that his eyes were at fault. The writer has found much relief, as to strain upon his eyes, in using an opaque curtain to shut out all light coming through the window from below a line with the head-rest of the chair.

The dentist should study to make himself as comfortable at the chair while operating as possible. Operators who have not learned to operate while looking in the glass at the reflected tooth cannot imagine the great relief that is experienced in so doing. The writer has derived much satisfaction and comfort from using an instrument combining a mirror and a point to hold the first pieces of gold in a cavity. By its aid he is able to fill all ordinary approximal cavities in the incisor teeth from the palatal side while standing nearly erect over the patient.

It is the invention of Dr. Hodson, of Thirty-ninth Street, this city, and was formerly made by the S. S. White Company. The writer was recently informed that the company had ceased the manufacture of them because the dentists did not appreciate their usefulness. The writer is fully persuaded, from his limited experience in the use of a stool for operating, that it is the duty of every young man to accustom himself to its use. He is confident that, if it had been called earlier to his attention, it would have been better for him.

The employment of a female assistant cannot be too strongly recommended, and she should be taught to do everything that it is possible to delegate to her. The dentist who administers a general anæsthetic is likely to subject himself and his patient to great embarrassment if he does not have a female assistant present during such administration. He may even find it extremely difficult to controvert the suggestion that may have come to the mind of his patient while under the influence of the anæsthetic, and he thus be held under suspicion of that of which he is entirely innocent. Since the condition of the mind has much to do with the physical condition, the dentist should protect himself from those petty annoyances which will occur unless guarded against. It would be better to give one-half hour in the day for examinations, consultations, etc., without charge than to permit these to annoy one at irregular intervals through the day; to say nothing of the injustice of keeping the patient waiting who is paying for our time at the chair. The assistant, if she has tact, will do much to relieve us in this direction.

"Lest we forget," may we call attention to the almost universal habit of dentists of neglecting their own teeth, also to the indifferent class of dental service usually rendered by dentists to their *confrères*. The writer has heard his own mouth spoken of as one

representing the best class of dental work, as a whole, ever seen (by the dentist making the remark) in the mouth of a dentist.

This is attributable, first, to good luck in having, as a boy, fallen into good hands; and second, to the fact that he has made appointments with good dentists, kept his appointments, submitted to being a patient, and paid for his work. The average dentist runs in on his friend when he happens to have a few moments of leisure, and has some slipshod plastic work done, with the promise that later on he will make appointments and have his mouth put in order, which he never does, hence exposed pulps, alveolar abscesses, pyorrhœa, and foul breath abound in the mouth of the dentist, "who, having preached to others, becomes himself a castaway."

The dentist should not combine home and business under the same roof. There are two principal reasons for this: First, his patients will expect him to be always at their service to operate for them at unreasonable times in the morning and evening, to say nothing of Sundays and holidays. Second, the dentist will be much more liable to suffer from lack of out-door exercise. If possible he should live so far as to necessitate a walk of a mile or two morning and evening, and this walk should be a brisk one. Better than this would it be if he were so situated that he could ride a bicycle at least ten miles a day.

Your essayist, for more than thirty years, averaged two weeks out of every year ill in bed. During the years of 1899 and 1900 he rode five thousand miles on a wheel, for the most part from home to office and return, with the result, no day in bed in two years.

Whether it be walking, bicycling, horseback riding, or what not, of one thing make sure,—the dentist who does not get some out-of-door exercise will pay for it in days cut off from his life. Let it be remembered that one of the largest debts a dentist owes himself is that he shall find some wholesome diversion that will enable him at times to forget he is a dentist.

If a dentist will make anything of a financial success of his life he must learn self-denial, must be methodical, must waste no time, and must keep his word and credit good. He must be business-like, and send his bills regularly and promptly, and he should know where his money goes. He must keep abreast of the times by reading the journals carefully, and he must prepare himself to do not only the ordinary, every-day work, but the work that is considered unusual.

The dentist who finds it necessary to refer every third patient to some other man is not doing for himself all he could. Furthermore, let him remember that it is his business to make a favorable impression upon those with whom he comes in contact, always keeping in mind the thought of one who wrote, "This above all: to thine own self be true, and it must follow, as the night the day, thou canst not then be false to any man."

CLEANSING THE ORAL CAVITY.

BY S. BLAIR LUCKIE, D.D.S., CHESTER, PA.

To secure and maintain a healthy condition of the human mouth often requires strenuous efforts on the part of both the patient and the dentist.

A condition of health, or one approximating it, is obtained by frequent visits for the removing of collections from those places inaccessible to the brush, or difficult of removal by other means usually employed by the patient; it is, however, accompanied by inconvenience and expense, and places the responsibility largely upon the dentist.

It is well, at least in those cases requiring absolute cleanliness, to place the responsibility of maintaining the condition antagonistic to disease as much as possible upon the patient. Especially in pyorrhœa alveolaris and gingivitis should the patient be impressed with the fact that cure and its maintenance must largely depend upon his vigilance.

For some time I have been recommending to those of my patients who are affected with pyorrhœa alveolaris and gingivitis a douching of the mouth by means of a rubber hose attached to the faucet of a bath-tub. The modern tub being supplied with a double faucet makes it convenient to obtain a force of water at the proper temperature. The force and temperature is under the control of the patient. By the pressure of the hose between thumb and index-finger the force can be increased to a degree sufficient to expel from the interstitial spaces all deposits that are not attached to the teeth.

All the surfaces of the oral cavity can be subjected to the action

of the stream,—the gums, buccal surfaces, under the tongue, the teeth, and, to those persons not easily gagged, the fauces.

During the operation the mouth is kept open, allowing the water to flow into the tub.

The results obtained from this treatment make it worthy to be presented to the profession. Not only is it an effectual way of cleansing the oral cavity, but the force of the stream seems to have an effect upon the gums similar to massage, causing the product of disease to be removed.

GOLD FILLINGS.

BY H. ELMER TROSTIL, D.D.S.

MANY gold fillings of the present day last but a very short time. Why? First, because they are made of cohesive gold throughout, packed in such a careless manner that the gold is not perfectly adapted to the base and the walls of the cavity. Secondly, because deep retaining pits are used and the walls at the cervix thereby weakened. Why should this be done when the most gratifying results may be obtained by the use of cohesive gold throughout the cavity without pits or deep undercuts?

To accomplish this, prepare all cavities retentive in form, the same as for porcelain inlays, and flow Cavatine, Gilbert's Antiseptic Cavity Lining, or other such like preparation over the bottom of sensitive cavities, so as to protect the dentinal tubuli from the phosphoric acid in the cement.

This done and the gold annealed ready for manipulation, take a very small quantity of cement mixed to the consistency of putty and place it at the bottom of the cavity and over this a piece of gold large enough to cover the bottom of the cavity well, which should be pressed firmly to place with two pluggers. In a short time the cement will have hardened and will cling firmly to the walls of the cavity and to the gold, just as it does in retaining an inlay. In addition to this, in large cavities it prevents the gold from showing through the tooth-structure, which is oftentimes quite as unsightly as is the gold showing on the surface.

Where gold fillings are inserted in teeth that are conspicuous,

or where they are exposed to mastication, they look and wear much better if they are finished with platinum and gold-foil No. 60. Of course, care must be taken to have the cavity filled to such an extent that the margins are covered before using the heavy foil, or there will be danger of fracturing the same.

Reports of Society Meetings.

THE NEW YORK INSTITUTE OF STOMATOLOGY.

A MEETING of the Institute was held at the Chelsea, No. 222 West Twenty-third Street, New York, on Tuesday evening, June 2, 1903, the President, Dr. J. Morgan Howe, in the chair.

The minutes of the last meeting were read and approved.

Under the head of Communications on Theory and Practice, Dr. C. O. Kimball read two communications from Dr. L. C. Bryan, Basel, Switzerland.

TREATING SENSITIVE DENTINE.

BY DR. L. C. BRYAN, BASEL, SWITZERLAND.

GENTLEMEN OF THE INSTITUTE OF STOMATOLOGY,—We have used carbolic acid from time immemorial to anæsthetize dentine, but the suggestion of Dr. Jenkins, of Dresden, to use it *hot* has awakened a new interest in this valuable remedy. I have, however, found that applying it hot to a sensitive tooth is painful in itself, and it soon cools, and each time it is reapplied hot it is painful. I therefore use a piece of cotton twice as large as the cavity, and saturating this with carbolic acid, warming it slightly, insert part of the cotton pellet into the sensitive cavity. I now take the Mitchell double-end bulbous copper gutta-percha remover made by Ash & Sons, or a suitable large steel burnisher which will retain the heat. Have another pellet of cotton on the operating-table saturated with carbolic acid. Heat the copper point and apply to the cotton on the table. Carbolic acid volatilizes at a low heat. If the cotton “smokes,” the instrument is too hot, and one waits until it ceases to produce a visible vapor. Then it is applied, still hot,

to the outer surface of the cotton in the cavity, allowing this to heat up gradually and not to produce pain. The copper point is gradually buried deeper in the carbolic cotton until it is thoroughly heated. When the instrument cools down, repeat the heating, testing, etc., as before, and in two minutes the desired effect will be produced, if *any* effect can be produced on the sensitive dentine. Treatment should be repeated as the excavating proceeds and sensitive surfaces recur.

LOCATING AND CURING ABSCESS TRACTS.

No doubt many of you have had trouble in deciding on the direction of alveolar abscess or fistula, either to locate the tooth it leads to or the length and depth of an abscess canal. A painless and very satisfactory method I have found to be the following:

Take an ordinary long-pointed gutta-percha pulp-canal point, or make one by cutting a pointed strip from a sheet of base-plate gutta-percha tapering down to a fine point. Dip the whole pin into carbolic acid ninety-five per cent.; do not warm it. Insert the point into the fistulous opening and let the patient push it in himself, press it in, even beyond any point of resistance, down to the butt-end, leaving enough stand out to see the direction in which it extends, and in which direction the canal leads; let it remain thirty seconds; mark the pin at the surface of the gum.

In removing the point, the thin end will be found to have doubled on itself or curled up at the bottom of the canal, and the whole point will be bent in just the curve of the abscess tract and remained curved after removing. Thus one gets the exact depth and direction of the canal from the mark of the gum surface to the doubled-up end of the pin.

The carbolic acid will cauterize the whole tract; the doubled-up loop at the end can now be dipped again into the carbolic acid and reinserted, twisting it around and around until the abscess sack at the end of the root has been cauterized on all its walls and broken up. This will cure most such tracts if the canal of the tooth has been filled. But, if after giving the treatment a trial the abscess does not heal, the same treatment is reapplied to anæsthetize the tract, left for a minute, the point withdrawn, locating by the curve of the pin the exact direction of the tract. Now a small bur in engine can be used to follow up the tract and reach the diseased

point and bore away the diseased bone or rough point of apex of root, applying carbolic acid occasionally as one proceeds. The advantage of knowing if the abscess comes from the point or the side of the root or bifurcation of roots or elsewhere is apparent to any one, and this is the only method I know of locating it exactly and measuring the exact depth of the abscess painlessly. It is also useful in fixing the depth of an alveolitis pocket and at the same time anæsthetizing it before operating to remove tartar, which operation is often otherwise an exceedingly painful one. The carbolic acid softens the surface of the pin and allows it to bend to the exact curve of the canal in the bone, and the end to double on itself at the bottom of the tract. The carbolic acid is dissipated quickly by absorption in the tissues, having the pin rigid and springy, so that it retains the curve given to it on insertion when removed.

L. C. BRYAN.

Dr. S. E. Davenport would like to make personal acknowledgments to Dr. Bryan for sending these papers. They certainly would be helpful. Dr. Bryan had shown before that he is a man of great originality. While it was possible that some of the gentlemen had used some of these methods fifty years ago, he must confess that the use of gutta-percha points in the abscess tract was entirely new to him. It seemed to be a very valuable idea.

Dr. C. O. Kimball wished, if there were no further remarks to be made upon this subject, to present a little incident of office practice. He had had occasion, many times, to confess faults. This time he wished to confess somebody else's fault. He had recently run across an extremely simple but an extremely serious case of malpractice; nothing but a little tartar left upon the teeth. A gentleman twenty-five years of age, strong, vigorous, and in excellent health, but with a condition of irritation and redness of the gums about some of the teeth, had recently come into his hands for treatment. The patient began immediately to tell of a course of treatment recommended by his former dentist. It seemed that he had noticed this condition of inflammation two years previous, and had called the attention of his dentist, a New York man, by the way, to it. The dentist had made what he termed the pyrozone test, washing the mouth with pyrozone and water, half and half, and white spots had come out upon the gum, whereupon

the dentist asserted that the young man was suffering from a disease of the gums and required antiseptic treatment. He recommended the use of a wash of listerine or pyrozone, and that on no account should he brush the gums for fear of injuring them, but that in cleansing the teeth he should use the softest brush obtainable. He stated that the color of the gums indicated this condition; that the patient had been too diligent in cleansing his teeth and had worn away the gums.

Dr. Kimball stated that it seemed a long story for a very little thing, but the case had so startled him that he could not refrain from describing it in detail. It was hard to believe that any man here in New York, who had been in practice six months, could overlook the true cause of such a condition. It was not at all a difficult case. On the anterior surfaces of the upper central incisors was a black line of hard tartar showing at the surface without pushing the gum back. He had simply removed this tartar. Within twenty-four hours the condition of the mouth was entirely different and well on the road towards recovery. Dr. Kimball did not feel that any apology was necessary for bringing this case before the Institute.

Dr. LeRoy mentioned a similar case of so-called malpractice where the tartar around the neck of the teeth was mistaken by the dentist for decay, and the patient was told that these teeth all needed to be filled, and actually did fill some of the teeth so affected. This seemed to him a more serious case of malpractice than the one mentioned by Dr. Kimball.

Dr. George E. Adams, of South Orange, New Jersey, read a paper entitled "Treatment of Deciduous Molars."

(For Dr. Adams's paper, see page 927.)

DISCUSSION.

Dr. E. A. Bogue was pleased to see that Dr. Adams acquired the wisdom of the ages. It was becoming more and more widely known *now*, as it was years ago, that the deciduous teeth are of consequence. This knowledge had gone into decadence like the other lost arts. He was glad it was again thought worthy of consideration, for unless the deciduous teeth remain in health until the time that nature should naturally and healthfully shed them, it is almost impossible to predicate a sound and regular set of permanent teeth.

Dr. C. F. Allan thought the importance of the preservation of the deciduous teeth had been very well presented by the essayist. Dr. Allan wished to emphasize what Dr. Adams had said about the importance of kindly and gentle treatment of little patients. If treated with kindness and tact, they became the most desirable of patients. Indeed, Dr. Allan would prefer, if he were to choose a special line of practice, to work for children.

Dr. Kimball, in connection with this interesting and valuable paper of Dr. Adams's, mentioned the case of a little girl whom he had had in his chair that very day, the daughter of an old patient of his who had been in his hands ever since she herself was a small child. The child had come a year and a half ago, with all her temporary molars very badly decayed. She was in such a nervous state that it was absolutely impossible to do anything with her. She had had trouble with her ears, her eyes, and her nose, so that she had had three different physicians operating on her head. These things had to be done. When she had come to him she was screaming with fright. He felt as Dr. Adams feels, that a little child he could always manage, provided they had not been frightened by some one else. He could do nothing with this child. Finally, he told the mother that a little something, at least, must be done. He instructed her how to apply nitrate of silver to the child's teeth and sent her home. She used nitrate of silver freely, with a little salt afterwards. Last fall he had seen the child, and was then able to get her to let him apply the nitrate of silver himself. She soon learned that a dentist was not such a bad thing after all. To-day he had had no trouble. He was able to cleanse the teeth and get some gutta-percha into one of them. This simply showed two things,—one, that nitrate of silver will check decay and relieve pain in severe and extreme cases; and two, that even the most nervous children, with a little time and patience, can be controlled.

The President called attention to a tooth that illustrated the restraining effect of nitrate of silver upon decayed surfaces. It was a case of remarkable predisposition to decay. The tooth was one that had been treated with nitrate of silver. Decay had begun all around the original cavity, but the surface treated had not been reattacked, but was elevated above the surrounding decayed surface.

Dr. Wheeler stated that, in connection with Dr. Adams's paper, it had occurred to him that exposed pulps in children's teeth could

be saved many times where the same was impossible in the case of adults. This could be accomplished by covering the exposure, without pressure, with a mixture of oxide of zinc and oil of cloves or eugenol. He had practised this with success at the clinic at St. Bartholomew's.

Dr. Locherty thought it would be rather hazardous many times to treat a temporary molar, especially with an abscess where necrosis might follow. He mentioned a case that occurred in his work at the clinic, where, upon extraction, he found the anterior buccal root absorbed, while the other roots were practically perfect.

Dr. F. Milton Smith read a paper entitled "Suggestions regarding the Obligations of the Dentist to Himself."

(For Dr. Smith's paper, see page 930.)

DISCUSSION.

Dr. Adams had been very much interested in the paper. Regarding the question of cutting office hours short for recreation, he had frequently promised himself to do so, but found it very difficult. However, he realized that to prolong hours in the office meant to shorten one's life. Regarding the office stool, Dr. Adams spoke very highly, having used one for sixteen years. If he had to discard the stool, he feared his office hours would be very much shortened. Dr. Smith's remarks regarding astigmatism had interested him. For several years he had suffered from severe headaches, so much so that he frequently had to break appointments. His physician said it was indigestion. He had gone to an oculist and had proper glasses fitted. Within a week his headaches had ceased. Before that time scarcely a day ever passed without headache.

Dr. S. E. Davenport expressed his pleasure over the paper, and thought there was too much in it for consideration during what remained of the evening. Dr. Smith had called attention to many little points of importance. Regarding the question of sitting while operating, Dr. Davenport said he owed a debt of gratitude to Dr. Bogue for starting him right on this subject, for he operated in this manner now about one-third of the time. Dr. Davenport thought the chair designed by Dr. Bogue was far preferable to the ordinary stool, affording not only rest for the body but for the feet also, having a foot-rest. This enables the operator, during certain parts of the work, to put his feet up from the floor. Dr. Davenport

was glad to hear the subject of petty annoyances brought up. He believed that examinations should never be made except by appointment, unless the dentist had a regular consultation hour, which most dentists could not afford. The patient should understand that the time of the operator is valuable, no matter whether he be making an examination or performing the work. Under, practically, no circumstances should the dentist leave the patient being operated upon, especially if the rubber dam is in position. The patient who comes in might be in a plight, but Dr. Davenport could not imagine a much worse plight than the patient with the rubber dam forced down between the second and third molars, for instance. The dentist's duty was to the sufferer in the chair rather than to the patient who happens in. An opportunity can nearly always be made later on in the day for the relief of suffering. Greater progress is made by attention to the work in hand rather than in the effort to please all who may come in without appointment.

Dr. Bogue thought that the quicker dentists learned that they were professional men, and that their time was valuable, the better it would be for them. Until they felt it they could not expect their patients to feel it. In regard to putting in three or four gold fillings when one would be better, Dr. Bogue recalled the indignation expressed by a gentleman when told that it would cost fifty dollars to fill a central incisor that had lost the filling inserted by Dr. Dwinelle. On examining the chart, it was found that he had inserted three fillings on the cutting edge and two on the sides, making in all five fillings, doing the same work that Dr. Bogue proposed to do with one, but the patient had been perfectly willing to pay this price for the five fillings. Here was a splendid operator who had set us this bad example. Dr. Smith is trying to convince his patients that he is doing honest professional services for them. He does not need to try. The thing would show for itself.

Dr. Brush, under the criticism of putting in several fillings where one would do fitter service, mentioned a case that had come under his observation. One of the items on a bill to which exceptions had been taken was for fourteen fillings in a single molar tooth.

Dr. F. Milton Smith appreciated the kindly words that had been spoken, but since no exceptions had been taken, as a paper calculated to provoke discussion he supposed it was practically a failure.

Dr. Smith was indebted to Dr. Davenport for suggestions relating to the operating-chair. Referring to the matter of putting in five or six fillings in place of one, Dr. Smith had referred to those cases only where a single filling would be much better.

Adjourned.

FRED. L. BOGUE, M.D., D.D.S.,
Editor The New York Institute of Stomatology.

ACADEMY OF STOMATOLOGY.

A STATED meeting of the Academy of Stomatology of Philadelphia was held at its rooms, 1731 Chestnut Street, on the evening of Tuesday, March 24, 1903.

Papers were read by Dr. D. R. Stubblefield, of Nashville, Tenn., entitled "We made Better Dentists then than now," and Dr. S. M. Weeks, of Philadelphia, entitled "The Importance of the Mesio-Distal Relation of the Two Arches during Childhood."

(For Dr. Stubblefield's paper, see page 917; for Dr. Weeks's paper, see page 842.)

DISCUSSION OF DR. STUBBLEFIELD'S PAPER.

Dr. E. C. Kirk.—In attempting to open the discussion of this question, I fear that I have been set a difficult task. It has not been stated in the paper just who are meant by "they," nor has the essayist stated whom he means by "we." These are two very important factors. The "they" I have any knowledge of from personal experience do not date back more than twenty-five years. Back of that knowledge of educational conditions has been obtained from the literature of our profession. I do not believe that the gentlemen who uttered the statement quoted as the title of the essay meant what that title would be taken to mean read as a bald statement. It must need qualification from the fact that the essayist says it was a statement made by one of the best men in dentistry. It seems impossible that in our growth of knowledge of detail which makes up our educational system we have taken a backward step. If the statement means that we actually did make better dentists then than now, I frankly state that I do not believe it; because within my recollection it was quite customary to talk about such things as "laudable pus." We know now that pus is

not laudable. We knew very little about the conservative treatment of the dental pulp. We have gone the whole gamut, and are beginning to view the operation of pulp-capping somewhat askance. We knew little about the etiology of dental caries, though men would attempt to explain the tendency of teeth to decay on the proximal surface upon the theory of lateral pressure. It may seem insignificant that a wrong conception of theory should have any particular bearing on our work, but as an outgrowth of that conception we had methods for the absolute mutilation of the approximal surfaces, because men believed in the production of caries by proximal contact. It took some years of scientific education to get rid of that heresy, and upon this newer education we have based a rational mode of practice. The men who know these things are better dentists than those of years ago who did not know them. In regard to manipulative skill, they had some wonderful operators then. (I am speaking of the "they" within my recollection.) I was talking with a man from Kansas City on this topic, and he said that twenty-five years ago he was the only dentist in Kansas City capable of putting in a decent contour cohesive gold filling. To-day there is scarcely a village throughout this land where we will not find a man capable of doing this work. I think that twenty-five years ago there were more men especially called to practise dentistry in the sense that they had natural ability and enthusiasm for their work. I read recently in an old copy of the *New York Dental Recorder* an advertisement of the old Baltimore College of Dental Surgery. The winter courses were from November to February, and the men attending the medical course were permitted to come up for the degree at the end of one winter's course. Dr. Stubblefield said they assimilated the courses better then than now. Naturally, for they did not have much to assimilate. The data of dentistry had not grown then to present proportions. The men who make this comparison to the detriment of modern dental conditions seem to overlook the fact that the data has accumulated to such an extent that it is beyond the ability of the ordinary mind to grasp it at once. This was illustrated at an Alumni meeting at Buffalo when an instructor was making a plea for laboratory instruction in medicine. Later in the evening an older alumnus said, "I do not want to cast any reflections upon this modern method of teaching, but I belong to that class who graduated some thirty or forty years ago, and I ask, What has become

of the old-fashioned physician? We have nothing but specialists now. The old practitioner is occasionally making use of these laboratory experts. They send material for a report to be used as a means of diagnosis. In the course of time a paper is sent back with a lot of figures and new words and a lot of data extremely interesting, but what in the devil does it all mean?" That is the point. It is the business of the modern practitioner to know what it all means, and it is the business of the school to teach what it all means.

The part of the paper in which the essayist deals with the matter of education I think presents the most important phase of the question. He gave us a very interesting illustration of his own experience in finding that a quiz-master was a better teacher than one of the learned professors. I think dentists have gone astray on the question of terms. We hear "hard" and "soft" gold spoken of when what is meant is cohesive and non-cohesive gold. Another vagary of the dental man is that the theoretical man and the practical man represent two distinct branches. A theory is one of the most practical things in the world. A man may know how, and not be able to do a thing; but a man cannot do it unless he knows how. Do not let us make part of our creed the heresy that this scientific or physiological training is useless. A man cannot, in my judgment, properly prepare a cavity for a gold filling unless he knows something about bacteriology.

I am glad that Dr. Stubblefield called attention to the question of the fourth year. I hope the time of the fourth year will be so utilized that, instead of adding new data to the curriculum, time will be afforded for teaching thoroughly what we now attempt to teach in three years.

Dr. James Truman.—I suppose it is necessary for us all to have something to say on this subject, especially we of the older class. It is a habit, I believe, with all the older men to say that the former days were better than these. I do not belong to that class, and yet while I say that I want to be understood. The older days in some respects were better than these, and the present is infinitely better in other respects than the older days. We must make a distinction. When we go back to the very beginning of the dental profession, so to speak,—I mean the origin and formation of college life,—those of us who had any experience in that direction knew well how limited was the instruction. The man who wanted

to study anatomy, for instance, received but a modicum of the science. Chemistry was not, physiology was not, and, may I say it? mechanical dentistry was not. This was because the men who came into dentistry along in the fifties were men who studied under other dentists, who received their mechanical education under the fathers of the profession, and coming into college they cared nothing for the mechanical and a great deal for the operative instruction. The mechanical part was neglected, and up to a period in the seventies there was practically no mechanical dentistry taught at any of the colleges that I was acquainted with. Then came a change, and if there has been any change that has been to the advantage of the dental profession, it has been that the technique of mechanical dentistry has been more thoroughly elucidated during the last twenty-five years. In my opinion, in the proportion as that branch has advanced, operative technique has lost ground. This is probably because we have undertaken to do too much in this present day. I am in sympathy with the broader education of the present time, but I am sure that the men do not digest what they receive. There is but a partial education all the way through. I do not agree with my colleague that it is necessary for a man to understand bacteriology in order to prepare a cavity correctly. Much as I admire bacteriology, I feel that the doctrine of "extension for prevention" is the throwing of sand into the eyes of the operator of the present day. I believe in thorough education. I believe that if you want a man to know anything at all you must drill it into him, and that cannot be done in a few days or a few weeks. He must have time to digest that which he has taken into his mental organism. We have not had sufficient time for that, and this is the reason why we are not making better practical dentists to-day than were made when I was young in dentistry.

The operative branch to-day is not equal to what it was forty years ago. When I say that I mean that we knew how to fill teeth fifty years ago. I said that at the last meeting of this Association when Dr. Rhein talked about the improvement that had come about since Dr. Webb had come into this profession. We did not have all the appliances that we have at the present time, and it required more skill with the few that we had at that period. The past was the foundation upon which all the present is built. We must endeavor to arrange the curriculum that the individual will take that which seems best adapted to his work and endeavor to

do it thoroughly. I do not want to be misunderstood here. I am just as much in favor of that broader education as my friend Dr. Stubblefield, or as Dr. Kirk, but I want every individual to be as thorough as possible in what he acquires.

It has been said that men were older when they came into the profession a few years ago. That is true. They were older because they had been with their preceptors. We find to-day a better educated class of men entering the profession, but they enter without any idea of their fitness to become dentists. I regret we have such a class of students to deal with. Twenty-five or more years ago men knew why they wanted to become dentists; now it is more often what the parents or guardians desire.

Dr. S. H. Guilford.—It is very difficult to decide a question of this kind on account of the many problems presenting. There is something to be said on all sides. As has been said, men who studied dentistry twenty years ago were men who had some decided taste for this sort of work. This was shown in the boy who would take clocks apart or meddle with locks or water-wheels. In my own case I was led into dentistry simply because I was constantly tinkering at something. At that time, too, the boy entering dentistry was put on a system of probation to ascertain whether he was fitted for dental work. If he was not, he was dropped. To-day young men enter dentistry for the reason that they think they can make more money and make it more easily than in some other way. Looking at the matter in that light, I believe more good dentists were turned out forty years ago than to-day.

In regard to the making of dentists, they did not make the dentists; the dentists made themselves. When I went to college we had a good course in anatomy, but of the other branches we did not have very much that we could be proud of. We secured, however, a little foundation upon which we could build. If I know anything of dentistry to-day, I have learned it nearly all since I left college. It is not necessary that our students assimilate all of the curriculum; if we take them over the curriculum and get them into the position where they can learn after leaving college we are doing well with them. A man must have ability and knowledge, and if he has the ability he will work, and there is no reason why he should not be a success. I wish there were some way to-day of finding out when a student enters college whether he has natural qualifications for the practice of dentistry. Any profession is bet-

ter when made up of men especially fitted for the work. I do not think the number of branches in the curriculum needs to be increased, but more thorough drilling in the present branches is needed.

Dr. E. T. Darby.—I was present in Chicago at the Institute of Pedagogics, and heard the statement made which has been the text of the evening. It was made when the subject for discussion was "The Fourth Year in Dental Schools." I also heard the gentleman who made the statement modify it at the close of his remarks by saying that we made better practical dentists twenty years ago than we make to-day. The statement was made with the idea of emphasizing the importance of giving the student in the fourth year a great deal of practical work. I heard this same man say at that time that no one was more in favor of broad culture, of thoroughness in training, than himself, and that he believed in giving the student everything that it was possible to give him in the way of culture commensurate with making a good practical dentist of him. I do not believe that that man believed in giving the student less, but in giving him more, practical work. It is by doing over and over and over again those things that we do with our fingers that we become dexterous in their doing. We have crowded into our three years so much that is valuable, so much that students ought to know, that we have sacrificed to a large extent the time that ought to be devoted to practice. For that reason I believe that that statement was true, that when twenty years ago we had very much less in our curriculum than we have now, and expected very much less of our students than we do to-day, and when they devoted so much more time to work in the laboratory or in the clinic-room, they were better practical men than the men turned out to-day.

For this reason I shall hail with delight the addition of the fourth year to our course. I would not take anything from our present college course, but I would make the men good practical dentists before we send them out. If the men who have a fitness for dentistry would enter our schools, we would have no difficulty in turning out good dentists.

Dr. Kirk.—I would like to ask Dr. Darby if, in his judgment, it is not true that if we do give sufficient time to the development of manipulative skill in the student, with this increased culture we will make better dentists to-day than we did then?

Dr. Darby.—We will make better dentists with the four years'

course simply because we will give the students more practice in addition to the better scientific foundation.

Dr. Jesse Green, West Chester, Pa.—I did not come to this meeting to make a speech, but to hear what others had to say. These men who have gone back twenty-five or thirty years seem to me to be boys. That which the essayist has said has struck me forcibly. I come before you as one who does not know anything. When I was a boy we read a few books, but we studied them thoroughly. To-day we read so much that it is impossible to retain it for any length of time. When I was a boy the one who had some talent for mechanical pursuits and tinkering was looked upon as one who would make a good mechanic. I studied with a man who was a mechanical dentist. When I asked him about some of the tissues of the body he did not know anything about them. It is often the case with men who know how to do a thing that they cannot tell why they do it. It is like the man who has charge of our town clock. "Well," he says, "it is so, and you know it is so, and that is enough." That was the way we were. We read a great deal of what had been said about the pulp, but we knew little about it. We were working gradually and building practical knowledge upon practical knowledge. We were trying to make ourselves dentists. The word "dentist," we thought, covered everything. I think the part in our teaching to be improved upon to-day is the practical work. While there has been great progress in dentistry, when it comes to mechanical work, up to the time of bridge-work, I think some of the prosthetic work done fifty years ago was probably equal to some of the mechanical work, outside of bridge-work, that we see to-day.

Dr. R. H. Nones.—As has been said, the men who entered dentistry twenty-five years ago were selected men. They received their first instruction under a preceptor, and, fortunately or unfortunately for them, they were told before entering college whether they were fitted for the study. In making comparisons with students of other days we forget that those men have grown in the profession. We might ask the question, What will the present practitioner be in the future? In twenty-five years I venture to say there will be no comparison between the work of men who will have been in actual practice twenty-five years and those men who to-day have had twenty-five years of experience. Twenty-five years ago a man who had been in actual practice five years could gradu-

ate in one year. I agree with Dr. Kirk that, given the extra amount of education with the same amount of manipulative ability, our graduates to-day cannot help being better dentists than were made twenty-five years ago. An unfortunate fact connected with the candidates for entrance that we receive to-day is the lack of manipulative ability. The requirements for entrance state that the candidate must have been two years in a high school. Twenty-five years ago every student who graduated was considered competent to practise; to-day he is obliged to confront an examining board.

My idea in regard to the fourth year is that if it be regarded as a post-graduate course, and used for practical instruction, it will be exactly what is needed.

Dr. M. H. Cryer.—I believe that to-day I am a better dentist than yesterday, and that this year we will turn out better dentists than we did last year, and that last year we turned out better men than we did the year before. We treat teeth better than we did formerly. We take better care of the mouth and the system than we ever did, and I believe that we are advancing all the time. It is not the time to look at what is past. I believe that as we advance and add to our knowledge the things that are necessary we will make better dentists than we did in the past.

Dr. William Trueman.—We must all recognize the fact that systematic dental education has not yet passed the experimental stage. This is impressed upon us by the fact that the last survivor of those starting our dental college is only eighty-three years of age. The man who qualified himself for his life work by laboring from ten to twelve hours a day for years was better prepared than some from our colleges to-day. He learned how to make metal plates fit to eat with. The question is, How shall we make better dentists? We do not want to go back to the times when nothing was known of bacteriology. To-day the student leaves college knowing how things should be done, but has not that knowledge at his fingers' ends. The addition of this manipulative training to scientific education is what is needed.

Dr. Stubblefield (closing.)—I feel the same embarrassment about closing my paper that I had in presenting it. I am not so recreant to modern progressive ideas as to believe that we have not improved upon the past. No college can make a man, but the college can lay a foundation upon which that man can intelligently make the superstructure. In regard to the fourth year, my own conviction

has been from the first that it was to be an opportunity to readjust, if necessary, the teaching; certainly to put the student and teacher in such relation as to get the best out of the possibilities; to stimulate the students to higher ideals and better practical results.

I congratulate myself that I did agitate your minds, which was the best I could hope to do, and I thank you very much for the attention you have given me.

DISCUSSION OF DR. WEEKS'S PAPER.

Dr. G. L. S. Jameson.—I have enjoyed this paper very much. I know that the doctor has given more thought to the subject than the majority of practitioners. I congratulate him upon his results, and I will say that he has been very helpful to me in certain lines of malocclusion. I think he is correct in saying that we should begin very early to look out for malocclusions and irregularities, and to do what we can from the very first to correct them. I try to see my own cases when they are from four to eight years old. There is little to be done but to see that the first teeth are extracted at the proper time and to look out for the first permanent molars, which should be given attention from the very first.

Dr. H. B. Hickman.—I am sorry that the men who discussed the first paper are not here to discuss this one, because this is new dentistry and not dentistry of twenty-five years ago. The men graduating to-day are better qualified than those graduating five years ago. When I graduated little was known of orthodontia. If a man got a case, he got rid of it as soon as possible. I have devoted a good deal of time to the subject of orthodontia, and have been greatly helped by the assistance of Dr. Weeks. I feel under obligation, first, to Dr. Angle, and second, to Dr. Weeks.

Dr. Weeks (closing).—I feel that the closing of the discussion is a matter of very little moment. I am surprised that I have not been brought to account for some things said in my paper. I thank you for your attention.

OTTO E. INGLIS,
Editor Academy of Stomatology.

TENNESSEE DENTAL ASSOCIATION.

THE thirty-sixth annual meeting of the Tennessee Dental Association was held at Lookout Inn, Chattanooga, Tenn., July 23 to 25, 1903, Dr. W. K. Slater, of Knoxville, presiding. The meeting was very satisfactory, pronounced by many to be the most interesting held for years. The attendance was good, including quite a number of the profession from other States. Some who would have otherwise attended were kept away on account of the National meetings at Asheville being held at the same time.

Ten excellent papers were read and thoroughly discussed, the President's Address being an especially happy effort, his principal theme being "Dental Ethics."

The clinics were presided over by Dr. A. A. McLanahan, of Springfield, and of course that part of the programme was not a failure by any means, many very interesting clinics being given. The "inlay man" was very much in evidence.

Treasurer Dr. J. D. Towner, of Memphis, reported the finances of the Association in good condition, with \$156.52 on hand.

Twelve new members were added to the roll, most of them being young men, which is, we take it, a good omen of better things ahead.

The Association sent a full delegation to the National and Southern Branch meetings at Asheville.

The following officers were elected for the ensuing year:

President, Dr. R. Boyd Bogle, Nashville, Tenn.; First Vice-President, Dr. J. D. Towner, Memphis, Tenn.; Second Vice-President, Dr. A. J. Cottrell, Knoxville, Tenn.; Recording Secretary, Dr. J. T. Crews, Jackson, Tenn.; Corresponding Secretary, Dr. W. K. Slater, Knoxville, Tenn.; Treasurer, Dr. W. P. Sims, Nashville, Tenn.; Member of Executive Committee, Dr. P. M. Joyner, Union City, Tenn.; Chairman Clinic Committee, Dr. A. A. McLanahan, Springfield, Tenn.

Essay Committee.—Dr. W. C. Gillespie, Nashville, Tenn.; Dr. A. J. Cottrell, Knoxville, Tenn.; Dr. J. D. Towner, Memphis, Tenn.

The next meeting will be held at Jackson, Tenn., on a date to be selected by the Executive Committee.

A. SYDNEY PAGE,
Secretary.

Editorial.

THE FOURTH INTERNATIONAL DENTAL CONGRESS. 1904.

THE close of 1903 naturally brings the dental mind to the consideration of what may possibly take place during the coming year of 1904. The year just closing has been fruitful in many directions, and it is believed it has seen dentistry steadily advancing towards the goal that has been so strenuously worked for during many years prior to the present.

The most notable effort of 1903 has been the settlement of the controversy pending for over a year between the International Dental Federation and its committee and the committee appointed by the National Dental Association to arrange for the Congress of 1904. This controversy, which at one time was acute, has been amicably settled, and the preliminary work of the Congress is being pushed forward with an energy that gives every evidence of success. There was a small local cloud, not as big "as a man's hand, that hovered over St. Louis, but it is believed that even that has measurably been dissipated. Outsiders have had some difficulty in understanding what it was all about, but at no time did it endanger the success of the Congress. That has for its promotion a world-wide interest and can have nothing to do with local differences, only so far as a united local support is much to be desired, as it adds materially to the comfort of visitors.

At the present writing there will be but nine months in which to complete the preparation of the Congress, a time certainly limited for all that will be required. An effort should be made to secure papers of an original character. The old and tried subjects that have appeared at congress after congress, and convention after convention, might possibly be consigned to obscurity. If there is one thing trying to the patience of the average regular attendant at conventions, it is to have served up repeatedly the professional dishes that have done duty so frequently as to be no longer mentally appetizing. If the committee on papers will use a wise discretion, they will not only eliminate these, but will

equally limit the number prepared on any one subject. It is very possible that the Congress will be inundated with papers on inlays and porcelain. There should be a certain amount of this, but unless the papers presented have at least the flavor of originality, they might profitably be returned to the writers. The subject of porcelain in its various phases, while not yet perfected, may profitably be left to the masters of the art, and papers from these, in all lands, must always be acceptable.

The great need of dentistry at the present time is original work, and while it is true that there is more of this than at any former period, it is not sufficiently extended, and the literature, as presented in dental periodicals, is not, as a whole, of a character to increase the feeling of gratification with the progress of the profession.

If the Congress can be made a starting-point for dentistry in the twentieth century, it will have accomplished much. The writer is, therefore, anxious that it shall prove, through its results, an incentive to scientific work. The younger generation of dentists need this encouragement. The product of the dental colleges throughout the world is of a higher character than at any former period, and its capability for greater results is equally pronounced. The character of the men having this in charge gives the assurance that this will be carefully guarded, and it is hoped that the suggestion may not be needed. It must be remembered, however, that it will be a serious disappointment if the Congress does not give us something to build upon before the time arrives for the next great international convention.

The world expects much of dentistry at this period in its history. It is recognized, as never before, as a prominent and important branch of the healing art, and our various educational means to this end must be continually advanced to meet this growing demand, and this applies with equal force to local, national, and international organizations.

Criticism in advance of performance is always an ungracious act, and the writer has no cause to exercise this function upon the preliminary work already accomplished. It has been entirely satisfactory, and gives promise of important results. It is, however, well to have the opinion of all shades of dental thought upon what is or is not expected of a congress such as this. The dentists of America are responsible for its success, and in order

to accomplish this they must make an exhibit of dentistry as it stands to-day in this country. If we have anything that our *confrères* in other countries do not possess it is our duty to present it. Let our work speak for itself. No claim is made that American dentistry, if there be such a thing, is any better than dentistry the world over. This claim has never been made by dentists upon this side of the ocean, although it has frequently been charged as a fact, and a very discreditable fact it would be if true. That which the dentists of this part of the world do insist upon is, that they have earnestly labored to unite dentistry into a progressive profession. Whether we are equal in this respect to other nationalities, or in advance of them, is a matter of no moment. It is believed that the dental world is rapidly growing, and narrow, contracted ideas are giving way to broader conceptions of professional duty and fraternal regard.

One of the important duties of a congress such as this is to foster the true cosmopolitan spirit, to unify the dental mind, and in this way mould the calling into a thoroughly composite body in which the several parts are indistinguishable. It will probably always be impossible to establish standards of training acceptable to all nationalities, but it may be possible to reach definite conclusions as to what constitutes a cultured dentist, and when that has been accomplished it will not be based on an education strictly medical or upon a training strictly dental. To eliminate these two extremes is a part of the mission of international dental congresses. It is to be expected, and certainly it is earnestly desired, that the entire civilized world will send its delegates to St. Louis in September, 1904, and the assurance can be extended that they will receive a cordial reception, and, further, that the home organizations will earnestly co-operate in enlarging the field of observation and practice in dentistry, in order that it may become more and more, in all nationalities, a body of cultured scientific men earnestly laboring, without selfishness, to lessen some of the ills of suffering humanity.



THE SOUVENIR MEDAL OF THE FOURTH INTERNATIONAL DENTAL CONGRESS.

THE illustration subjoined represents the medal authorized by the Committee of Organization of the Fourth International Dental Congress, to be held next year in St. Louis, Mo., August 29 to September 3, inclusive.

The figure upon the obverse side is that of St. Apollonia, the so-called patron saint of dentistry. This seems not only appropriate, but is an artistic reproduction of the original picture. The committee having the matter in charge speak of the reverse side of the medal as "having had ample consideration, and it is such, we think, as should meet with general approval. The universality and international character of the Congress movement is typified by the continental divisions of the world. The associated dates at the top of the design are those which embrace the professional life-history of dentistry. Falling gracefully down between the continents is a scroll upon which is to be inscribed the names of the recognized fathers of dentistry in all countries, each national body being asked to nominate the name or names to represent the respective countries. The pose of the eagle represents the auspices under which the Congress is to be held, and the palm branch a tribute of honor on behalf of the American profession to the fathers of dentistry.

"The execution of the dies will be intrusted to the most expert die-sinker in America. The design will be in high relief, and the medal will be struck in bronze, and will be about two and one-half inches in diameter. It will be a finished work of art in all respects, and an attractive and interesting souvenir of the great meeting which it typifies.

"The medal will be supplied only to those who make application for it in advance of the Congress, as the number struck will be limited to the number subscribed for. The price of the medal without a case has been fixed at five dollars. Cases for the medal will be furnished at prices corresponding with their character and quality."

The committee having this matter in charge are to be congratulated in having been able to produce such an artistic and at the same time a valuable memento of the Congress. It is imagined there will be some difficulty in selecting the father of dentistry in

each country to be inscribed on the scroll on the reverse side. The decision must rest, in this country, between Harris and Hayden. The choice will be difficult, for both were almost equally active in the development of the intellectual side of the profession.

INSTITUTE OF DENTAL PEDAGOGICS.

THE meeting of the Institute this year will be held at Buffalo, beginning December 28 and continuing three days.

The programme, as presented upon another page, indicates an unusually interesting meeting and with subjects attractive to all dental college men. Buffalo is, in many respects, an ideal place for a national meeting, being comparatively easy of access from most centres of dental teaching, and the meeting, therefore, should be well attended.

It is a matter of regret that it was ever deemed necessary to have two national dental college organizations, each holding separate meetings yearly and attended by the same men. It is a great waste of energy, time, and money, and means should be taken to unite this work with that of the National Association of Dental Faculties. As stated in a former article, the legislative business of the latter is about completed, and that which is left could be readily relegated to committees, leaving the sessions free for the discussion of educational topics. This would make the meetings of this body attractive and avoid the necessity for a separate organization for this work.

The Institute of Dental Pedagogics has been the means of demonstrating the value of an interchange of views upon the practical as well as the theoretical details of dental procedures, and while it has, perhaps, not materially changed the curricula of the several dental colleges of the country, it has kept educational thought in a vigorous condition and prevented relapses into obsolete methods, or, in maintaining courses from which progress has been mainly obliterated.

It is hoped, therefore, that if there cannot be a union of the two dental educational bodies, the Institute may continue its good work as a centre of dental thought and experience.

J. FOSTER FLAGG, D.D.S.

DIED, after a lingering illness, November 25, 1903, at Swarthmore, Delaware County, Pa., Dr. J. Foster Flagg.

The silent reaper has been rapidly decimating the ranks of the men who have done so much to make dentistry as we have it in this the earlier years of the twentieth century. It is with no ordinary feeling that the writer is called upon to record the fact that another has passed into the realms of silence after a life of unusual activity and one that has left a profound impression on the minds of his colleagues during the period in which he labored.

The time has not yet arrived when Dr. Flagg's work can justly be considered. He was a man not trained to follow in paths trodden by other men. If the word original can be applied to any one, it truly belonged to him, and in the way he marked out for himself few were found to follow; yet no man that dentistry has produced has made the impression upon his calling, in this country, as Dr. Flagg has done.

He came into his profession when dentistry was struggling from the chaotic period antedating the earlier efforts of the first half of the nineteenth century, and he was necessarily infused with the energy that characterized that period. This, combined with an exhaustless fund of original ideas, prompted him at once to take a leading part in the work of his day. He early became a leader, and blazed the path for himself through the tangled maze of practice which was just beginning to reach out to broader fields of activity.

No man in dentistry has been subjected to more adverse criticism than was his experience to endure, and while we may not agree with him in all his conclusions, especially in his views upon the—so-called—"New Departure," it must be said of him that he bore all this with kindly feeling, sure that in time justice would be done and the dental profession would eventually come to realize that there was a large substratum of truth underlying his attacks upon the dictum formulated by the fathers, "That what was worth filling at all was worth filling with gold." He taught "that in the tooth that most needed saving, gold was the poorest material to use."

The writer reserves for a future number to discuss this matter more in detail than would be proper at this time. It must be said, however, that he lived to see this apparently iconoclastic idea meas-

urably adopted by the dental profession, not that gold was abandoned, but many of the old and severer ideas held upon this subject fell into decadence, never, probably, to be revived as they were held forty years ago.

Those who knew Dr. Flagg intimately greatly admired his brilliant conversational powers and facility of expression upon the public rostrum, as well as his ever-genial character. In associated work he was an aggressive controversialist, but he never harbored an unkindly feeling towards his opponents. He seemed to recognize, as few others, that opinions were often based on mental temperament and were subject to change as more intelligent thought led to broader conceptions.

His work was not based on mere theory. He was a tireless investigator in his own field of work. Few men have done more to perfect the various filling-materials that have been classed as alloys and plastics, and it is only justice to his memory and his labors to say that no one has materially improved on his products in this direction.

While Dr. Flagg had long been retired from active practice and dental educational work, he still maintained a lively interest in dental subjects. His declining health prevented a personal activity, but no one more enjoyed the occasional visits of old friends, when he could talk over the exciting scenes of past contentions.

Dr. Flagg is almost the last of a race of men of which he and Dr. Taft, so recently deceased, are marked exemplars, and yet two men more unlike could hardly be found in professional circles. They both, however, lived to see marked advances made in the direction of their ideals.

The writer feels that, in parting with Dr. Flagg, a link has been dropped out of the chain of association, and yet its loss leads to a closer bond with those who still remain to carry on the work. When one has passed the limit usually given to man, it is idle to express vain repinings. Our friend and coworker has finished his labor with us to complete it more perfectly, it is hoped, in the eternal round of activities given to all who aspire to the highest.

Bibliography.

PRINCIPLES AND PRACTICE OF CROWNING TEETH. With four hundred and fifty-nine illustrations. By Hart J. Goslee, D.D.S., Chicago, Ill., Professor of Prosthetic Dentistry and Crown and Bridge-Work, Chicago College of Dental Surgery, etc. The Consolidated Dental Manufacturing Company, New York; Claudius Ash & Sons (Limited), London, 1903.

The author says, "In assuming to supply such a possible need (a modern text- and reference-book) an effort has been made to present the subject matter in a practical and concise form and in a more or less systematic and sequential order; as well as to avoid, in so far as possible, any consideration of methods which may have proved, or which are deemed to be, impracticable."

That the author has succeeded in this is made apparent to any one carefully examining this book. There has been so much written in periodicals in regard to bridge-work and crowns that the inexperienced operator feels a natural timidity in undertaking the work, and a large proportion of practitioners, when they do attempt it, make but a poor showing, either through lack of skill or a minimum of knowledge. There has been nothing ever introduced into dentistry that has been so much abused as this procedure. This has, possibly, been due to the lack of practical knowledge of metal work, that went out with the advent of rubber, coupled with knowledge of pathological principles of what must be done or left undone in this work. It is, therefore, with peculiar satisfaction that this book has been given to the profession of dentistry as a text-book and reference work. The author's name is a guarantee for good work, and this is borne out by the care with which every process, proved to have value, is demonstrated.

It is not always that illustrations are satisfactory, but the large number given fully show in every detail the descriptive text. It would, therefore, seem that one wholly unacquainted with the process could, by following the author, work up a practical ability sufficient for all cases coming under his care.

The author, it is thought, has made a mistake in discarding

any lengthy allusion to therapeutic treatment. It is just here wherein the greatest danger lies and while it is supposed that all graduates of dental colleges are properly taught how to treat teeth and how to handle bands in connection with the pericementum, it is very evident, from the fearful examples coming under observation, that proper precautions are either neglected, through ignorance or something much more to be condemned.

The author's statement on devitalization of pulps, "It now must generally be conceded to be a safer precaution, in a great majority of cases, to destroy such pulps as a prophylactic procedure, as well as to facilitate the necessary mechanical preparation when the crown is to entirely cover the end of the root," seems to the writer to be bad advice. While it is true that violent irritations may follow the preparation of teeth for crowning through thermal changes, causing shock to the pulp, the author should recognize that the pulp is something more than "a purely formative organ," and that its "physiological function" does not terminate with the complete development of the tooth. Teeth may last for an uncertain period without pulps, but no tooth is equally resistant to destructive influences without it as with it in full vitality.

It is somewhat surprising that no allusion is made to the tooth so universally used, at one period, for the insertion of a wooden pivot. The author seems to think that the English tube teeth were exclusively used for this purpose. While these were probably used to some extent with wooden pivots, the real wooden pivot tooth was manufactured extensively in this country without the metal tube. For ordinary pivoting the wooden pivot was generally used.

Another similar error, on page 8, is in giving credit to Dr. M. H. Webb "for swaging or burnishing a metal plate to the end of the root, then perforating it to admit of inserting into the canal a dowel which was soldered to the plate." Is it not about time that writers on dental subjects should cease to imagine that modern dentistry began, if it did not end, with Webb? It would require more years than the writer has at command to go back in memory to the time when this method was not in existence, and Webb simply adopted an old plan of inserting teeth.¹

When properly prepared and inserted, a bridge is of great value, but improperly made and inserted without judgment, it is

¹ See Harris, *Principles and Practice*, fourth edition, p. 645, 1850.

one of the worst artificial substitutes that dentistry has ever produced.

The publishers are to be congratulated on the excellence of the work, as to its general character, but more especially in the beauty and effectiveness of the illustrations.

ARCHINARD'S BACTERIOLOGY. A Manual for Students and Physicians. By P. E. Archinard, M.D., of Tulane University Medical Department, New Orleans. In one 12mo volume of two hundred and ten pages, with seventy-four illustrations. Lea Brothers & Co., Publishers, Philadelphia and New York, 1903.

This book is one of a series which the publishers decided "should embrace the entire realm of medicine; that the individual volumes should authoritatively cover their subjects in all essentials."

This one of the series, as its title indicates, is upon the subject of "Microscopy and Bacteriology." The introductory chapter briefly, but very clearly, treats of the "Refraction of Light and the Microscope," its use and care. The first chapter deals, very properly, with the history of bacteriology and its fundamental principles, followed by Chapter II., on the examination of bacteria, staining, etc. These are followed by chapters on the processes, media, and utensils for the cultivation of bacteria; inoculation of culture-media; sterilization, inoculation of animals, infection and immunity, pathogenic bacteria, etc. This will give a general idea of the scope of this small book, but its real value consists in the able condensation of the matter to be found in larger works devoted to this important subject. The book is well illustrated with engravings.

The idea that usually accompanies the examination of a compend is that they are unsatisfactory and lead to superficial knowledge. While this is generally true, it does not apply to this book or to any of the Pedersen series, for they constitute really a series of text-books that students can readily carry in their pockets as convenient refreshers of memory.

Each part is followed by a series of questions. It may be doubted whether these are of much value, either to the quiz-master or to the student for self-examination.

MODERN MATERIA MEDICA AND THERAPEUTICS. By A. A. Stevens, A.M., M.D., Lecturer on Physical Diagnosis in the University of Pennsylvania, etc. Third edition, entirely rewritten. W. B. Saunders & Co., Philadelphia, New York, London, 1903.

The author of this work says, in his preface to this the third edition, "Instead of considering the drugs in alphabetical order, as in previous editions, he has thought it best in the present revision to classify them according to their pharmacologic action." This plan may be of advantage in some directions, but it leads necessarily to cross reference, and this is of special annoyance in the study of a drug. The tendency to prepare works upon *materia medica* on this plan, instead of making the study more satisfactory to the student, has a tendency to a reverse effect. To the practitioner, however, the present method presents many advantages, and hence will be regarded by that class as a decided improvement over the earlier editions.

Aside from this seeming defect, there can be no criticism upon the general treatment of drugs in their physiologic action and therapeutics. The author has not only included nearly all the recently introduced drugs, but has clearly designated their action upon the system, thus giving the general practitioner a very certain guide for their proper use. A minor criticism may be made as to the very brief statement of the origin of drugs and the processes adopted to produce these. This, however, is a fault common to most works on *materia medica* outside of the large authorities, which necessarily enter minutely into this matter. It is doubtless supposed that practitioners are familiar with origin and processes, and students will naturally refer to larger works for more detailed descriptions.

In treating of arsenic, under the head of Escharotics, the author says of it, "Its *modus operandi* is not definitely known, but, as it does not combine chemically with the tissues, it is supposed to act directly upon the cells in a specifically poisonous manner." The experiments of Miller, Berlin, have demonstrated that the arsenic acts to paralyze the sensory nerves, and in this way it cuts off nutrition and ends eventually in the destruction of the tissue. It, however, is not a true escharotic in the sense of cauterizing the tissue, as zinc chloride and other true escharotics would do.

The experience of dentists clinically, and few have larger opportunities of observing the action of this drug, has been to confirm Miller's deductions. They have, by long and constant observation, concluded that in the treatment of pulps the action of arsenic is first to paralyze, and then devitalization slowly follows.

In describing the physiologic action of silver-nitrate, the author says of it: "Its corrosive action, however, never extends very deeply on account of the impenetrable nature of the coagulum that is at once formed." This is a mistake that should be corrected. It is the old story, often repeated, and which has been proved over and over again to be untrue. Perhaps dentistry can give the key to the action of this escharotic, for in the treatment of teeth with this agent it has been observed that it penetrates deeply the tubuli of the dentine, the depth of penetration depending solely upon the strength and quantity used, the coagulum having no deterrent quality. The reviewer several years since settled the question, through laboratory experiments, that silver nitrate was one of the most deeply penetrating coagulants and that the coagulum furnished no bar to its progress.

The part of the book devoted to "Remedial Measures other than Drugs" covers the use of electricity, massage, movement therapy, Nauheim treatment, cold, heat, etc. The closing portion of the book, covering one hundred and thirty-five pages, is devoted to "Applied Therapeutics," and will be a very valuable portion to both practitioners and students in medicine, but to the dentist it has a special value in contributing to that general knowledge so important for all workers in any specialty of the healing art.

Taking the book as a whole it must be regarded as an improvement on the author's previous work, and in many respects superior to the average books treating upon the same subject.

It is prepared in the usual careful manner of the Saunders publication company.

Domestic Correspondence.

HONOR TO DR. JENKINS.

TO THE EDITOR:

SIR,—There may be simultaneous invention or discovery in various parts of the world, but the man that puts time, money, brains, and influence into the work of *introducing* a good thing, and making it known, is the man who should receive the honor.

If, in addition, he puts himself earnestly, honestly, and intelligently to the improvement of the product, he is all the more a benefactor.

This is apropos of the modest letter from Dr. N. S. Jenkins on page 560 of the July INTERNATIONAL.

I happen to have seen some of the work done by Dr. Jenkins in his efforts to perfect the beautiful branch of our art upon which he has been engaged so many years, and I am fully convinced that he will presently furnish dentists with an enamel sufficiently low fusing to be worked with ease, but sufficiently near the high-fusing bodies to be durable in the mouth, and to be reliable in the matter of keeping its color under the necessary heat.

Furthermore, I believe that Dr. Jenkins's discoveries in this direction are to result in a revival of the use of that most artistic and beautiful substitute for lost teeth, continuous gum work, which can be used for partial plates as well as complete ones.

E. A. BOGUE.

Obituary.

JONATHAN TAFT, M.D., D.D.S.

DR. TAFT died at Ann Arbor, of apoplexy, at midnight, October 15, 1903.

This is the brief record of the last hours of one of the brilliant and most faithful men dentistry has known for more than half a century. He has been so much in the full glare of professional and

educational life during all that period that the writers of his personal history seem to have been at a loss to mark any special work as peculiarly his own, for he has been part of everything that meant an advance in dental work. Yet, as stated in an editorial in the November number, he was not an original investigator in the sense that that word is generally understood.

Jonathan Taft was born September 17, 1820, in Russellville, Brown County, Ohio. His father, Lyman Taft, was a native of Massachusetts, removing to Ohio in 1818. His son received his education in the public schools and in an academy in Brown County. After graduating he taught school for several years. He began the study of dentistry with Dr. George D. Tetor, of Ripley, Ohio, in 1841, and began practice in that town in 1843. He removed to Xenia, Ohio, in 1844, and practised there until 1858.

He graduated from the Ohio College of Dental Surgery in 1850, and was appointed to the chair of Operative Dentistry and Dental Hygiene in 1854 in this college, and continued to perform the duties of this position until 1879. During most of the years he filled the important and responsible position of Dean of the College, and continued to perform its duties until, in 1879, he was called to take charge of the Department of Dentistry connected with the University of Michigan. It was in this institution that the best work of his life was accomplished. While the labor of organizing this department was shared by an able corps of teachers, it was due to his fame, national and international, that the school became, in a comparatively short period, recognized as one of the leading dental colleges of this country. For a considerable period it and the Department of Harvard University were the only dental colleges recognized in England. The school under his guidance continually maintained a high standard and it was the first to demand a four years' course of its matriculants, and that in advance of the decision of the National Association of Dental Faculties, making this period obligatory on all schools in its membership.

Dr. Taft remained at the head of this department until the present year, when he was retired, it is said, upon a pension. This dismissal has caused much bitter feeling among the alumni and the general public in Michigan, but the facts are not at hand to form any opinion as to the merits of the controversy. It remains, however, a matter of deep regret that he was not continued in his position as long as he was able to serve intelligently. This, it

seems to the writer, was his due as a recompense for the great work he performed in building up the department.

In 1856 Dr. Taft became editor of the *Dental Register*, a monthly periodical devoted to the interests of the dental profession, and he closed his editorial labors in 1900, a period of forty-four years. This in itself was a record of faithful service not equalled by any one of his contemporaries, or is it at all probable that it will be imitated in the very near future. His labor upon this journal means a record of the modern life of dentistry in this country, for in that period it has developed from a crude mechanical calling into a near approach to a cultured profession.

In 1857 Dr. Taft became a resident of Cincinnati, establishing there a large and remunerative practice, and continued there until 1901, a period of thirty-three years.

In 1879 he resigned from the Ohio College of Dental Surgery and confined his educational work entirely to the Department of Dentistry of Michigan University, changing his place of residence from Cincinnati to Ann Arbor in 1901.

Dr. Taft has been a member of not only the local organizations of dentistry, but of all the national bodies organized during his life. He was made secretary of the American Dental Association at its organization at Niagara Falls in 1859, and in 1869 he was elected president of that body.

He was one of the original organizers of the National Association of Dental Faculties, at its first meeting in New York in 1884, and subsequently was elected to the presidency of that Association.

He was also an active member of the Institute of Dental Pedagogics. When the American Dental Association combined with the Southern Dental Association at Old Point Comfort, in 1897, Dr. Taft was present, and although it grieved him, as it did others, to part with the name and history of this organization, he felt it was for the good of dentistry, as a whole, that the sacrifice should be made, and, with the courage with which he was able to meet all changes, he entered into the new work of reorganization with the energy that had always been an inspiration to his colleagues.

His last active co-operation in the two national bodies—the National Association of Dental Faculties and the National Dental Association—was at the last meetings held at Asheville, N. C., in August last. To all appearances our old friend seemed, as he had been for years, active and alert to all that interested the younger generation.

In 1859 Dr. Taft prepared the work known as "Taft's Operative Dentistry." This was the first attempt to confine a book to the consideration of the subject of filling teeth and the pathological conditions connected therewith. Harris and other authors had preceded him, but they had combined mechanical dentistry with that of operative. It was the beginning of specializations in dentistry which have continued to the present time, increasingly dividing up the calling into a number of distinct but related vocations.

This work of Dr. Taft ran through several editions, and for some years was held as an authority and recognized as a text-book in all the colleges of the country. It was, unfortunately, not kept up to the standard of progress, and was eventually superseded by the works of younger men; yet, notwithstanding this, it must be regarded as one of the most important agencies in the general uplift of dentistry, and brought to its author a national as well as an international reputation.

Dr. Taft, as already stated, was not an originator. He must be considered in the light of an expounder of other men's work. His reports on various subjects at the national conventions, were models of clear statement, and his remarks in discussions always exhibited a grasp of the subject that insured him an attentive audience.

While holding positive opinions, he was not a controversialist in the sense of rousing bitter antagonisms, and yet he had the courage of his convictions and dared to carry these out in the face of much prejudice. When the writer advocated the admission of women into dentistry through a resolution offered at the American Dental Association held at Saratoga in 1869, he was not supported by any one, yet Dr. Taft very shortly thereafter introduced co-education into his school and continued it until the day of his retirement. He evidently did not care to enter into a wordy contest on this subject, preferring to give results to the world, and these have, in combination with similar efforts in other schools, been entirely satisfactory, opening up a new field of industry to womankind the world over.

To the students under his care he was a professional father, sympathizing with them in their difficulties, and an able adviser in times of need. One of his grateful students, in a private letter, writes: He was one "whose hands have stayed and aided many students in a downward career. Few men know the work, in that

direction, that Taft did. Money he used, and it was freely given." The fact that the alumni of his school have always been his devoted friends is the highest honor that can be paid any educator. They, as students, could measure his qualities, and the verdict they have universally given shows unmistakably that the man was deservedly honored for his ennobling qualities.

Dr. Taft was religious without a taint of bigotry. He never made his religion a standard for other men to work up to and adopt. He was altogether too cosmopolitan a character for any narrow faith. He could cordially associate with men of all creeds, ever apparently mindful that all nations, kindreds, tongues, and peoples must reach the highest through many avenues and through many standards of faith.

One of the marked evidences of the power possessed by Dr. Taft over his professional associates is the fact that, notwithstanding the number of strong men during the period about 1850, he commanded respect and had thus early secured a wide reputation. The writer cannot recall a period when Dr. Taft's name was not familiar to him as one of the prominent and progressive men in dentistry.

The following quotation from an address delivered, as president, before the American Dental Association in 1869 furnishes the key to Dr. Taft's life-work. He stated then, "I have no sympathy or patience with the professional brother who, reposing in his quiet selfishness, or reclining upon his dignity, refuses to take part in the great labor of the day. The man who does not feel and yield to the impulses of the age—aye, is not fired with its spirit—belongs to by-gone days; by some mishaps his coming has been delayed a few generations."

The calling of dentistry has lost one of its most earnest men. His whole life has been devoted to elevating his profession. He has set an example that all may follow,—all should follow,—with profit to themselves and their fellows. The thing that Dr. Taft most fervently believed in was that which the dentists of to-day need the most,—a true professional spirit. If his death can bring the great body to a realization of the fact that this spirit is almost entirely lacking, his life will have been a blessing and his death will not have been in vain; for it has emphasized this fact in his life more prominently than any other of his many good and noble traits of character.

In 1842 Dr Taft was married to Hannah Collins, of Ripley, Ohio, who died in 1888, and in 1889 he married Miss Mary Sabine, of Cincinnati, who survives him. Two sons, Dr. Wm. Taft, of Brewster, N. Y., and Dr. Alphonse Taft, of Cincinnati, and one daughter, Mrs. A. T. Edwards, by the first marriage, are now living.

Funeral services were held at his home, October 17, and the body was removed to Spring Grove Cemetery, Cincinnati, for burial.

RESOLUTION OF RESPECT TO DR. JONATHAN TAFT.

WHEREAS, After a long and useful career of sixty years, as practitioner, author, journalist, and teacher, death has ended the life-work of Professor Jonathan Taft, who was universally loved and respected by the dental profession for his scholarly attainments and high ethical standing; and

WHEREAS, In the death of Dr. Taft our profession has lost an advanced thinker and an able and enthusiastic exponent of the best in dental surgery; therefore be it

Resolved, That the Fraternal Dental Society of St. Louis extend our sincere sympathy to Mrs. Taft in her bereavement, which is the bereavement of the whole profession, and express our high regard for the worth and character of this pioneer, who so ably exemplified the highest ideal of American dentistry.

Unanimously adopted, October 20, 1903.

W. L. WHIPPLE, *President pro tem.*

E. E. HAVERSTICK, *Secretary.*

Current News.

PENNSYLVANIA BOARD OF DENTAL EXAMINERS.

EXAMINATIONS will be conducted by the Board of Dental Examiners simultaneously in Philadelphia and Pittsburg, December 15 to 18, 1903.

For application papers or any particulars address Hon. Isaac B. Brown, Secretary Dental Council, Harrisburg, Pa.

FOURTH INTERNATIONAL DENTAL CONGRESS, ST.
LOUIS, MO., AUGUST 29 TO SEPTEMBER 3, 1904.

COMMITTEE ON STATE AND LOCAL ORGANIZATIONS.

(J. A. Libbey, Chairman, 524 Penn Avenue, Pittsburg, Pa.)

THE Committee on State and Local Organizations is a committee appointed by the Committee of Organization of the Fourth International Congress with the object of promoting the interests of the Congress in the several States of the Union. Each member of the committee is charged with the duty of receiving applications for membership in the Congress under the rules governing membership as prescribed by the Committee on Membership and approved by the Committee of Organization. These rules provide that *membership in the Congress shall be open to all reputable legally qualified practitioners of dentistry*. Membership in a State or local society is not a necessary qualification for membership in the Congress.

Each State chairman, as named below, is furnished with official application blanks and is authorized to accept the membership fee of ten dollars from all eligible applicants within his State. The State chairman will at once forward the fee and official application with his indorsement to the chairman of the Finance Committee, who will issue the official certificate conferring membership in the Congress. No application from any of the States will be accepted by the chairman of the Finance Committee unless approved by the State chairman, whose indorsement is a certification of eligibility under the membership rules.

A certificate of membership in the Congress will entitle the holder thereof to all the rights and privileges of the Congress, the right of debate, and of voting on all questions which the Congress will be called upon to decide. It will also entitle the member to one copy of the official transactions when published and to participation in all the events for social entertainment which will be officially provided at the time of the Congress.

The attention of all reputable legally qualified practitioners of dentistry is called to the foregoing plan authorized by the Committee of Organization for securing membership in the Congress, and the Committee earnestly appeals to each eligible practitioner in the United States who is interested in the success of this great

international meeting to make application at once through his State chairman for a membership certificate. By acting promptly in this matter the purpose of the committee to make the Fourth International Dental Congress the largest and most successful meeting of dentists ever held will be realized, and the Congress will thus be placed upon a sound financial basis.

Let every one make it his individual business to help, at least to the extent of enrolling himself as a member, and the success of the undertaking will be quickly assured. Apply at once to your State chairman. The State chairmen already appointed are as follows:

General Chairman.—J. A. Libbey, 524 Penn Ave., Pittsburg, Pa.

Alabama.—H. Clay Hassell, Tuscaloosa.

Arkansas.—W. H. Buckley, 510½ Main Street, Little Rock.

California.—H. P. Carlton, Crocker Building, San Francisco.

Colorado.—H. A. Flynn, Denver.

Connecticut.—Henry McManus, 92 Pratt Street, Hartford.

Delaware.—C. R. Jeffries, New Century Building, Wilmington.

District of Columbia.—W. N. Cogan, The Sherman, Washington.

Florida.—W. G. Mason, Tampa.

Georgia.—H. H. Johnson, Macon.

Idaho.—J. B. Burns, Payette.

Indiana.—H. C. Kahlo, 115 E. New York Street, Indianapolis.

Iowa.—W. R. Clack, Clear Lake.

Kansas.—G. A. Esterly, Lawrence.

Kentucky.—H. B. Tileston, 314 Equitable Building, Louisville.

Louisiana.—Jules J. Sarrazin, 108 Bourbon Street, New Orleans.

Maryland.—W. G. Foster, 813 Eutaw Street, Baltimore.

Massachusetts.—M. C. Smith, 3 Lee Hall, Lynn.

Michigan.—C. S. Shattuck, 539 Fourth Avenue, Detroit.

Minnesota.—C. A. Van Duzee, 51 Germania Bank Building, St. Paul.

Missouri.—J. W. Hull, Altman Building, Kansas City.

Nebraska.—H. A. Shannon, 1136 "O" Street, Lincoln.

New Jersey.—Alphonso Irwin, 425 Cooper Street, Camden.

New York.—B. C. Nash, 142 W. Seventy-eighth Street, New York City.

North Carolina.—C. L. Alexander, Charlotte.

Ohio.—Henry Barnes, 1415 New England Building, Cleveland.

Oklahoma.—T. P. Bringhurst, Shawnee.

Pennsylvania.—H. E. Roberts, 1516 Locust Street, Philadelphia.

Rhode Island.—D. F. Keefe, 315 Butler Exchange, Providence.

South Carolina.—J. T. Calvert, Spartanburg.

Tennessee.—J. P. Gray, Berry Block, Nashville.

Texas.—J. G. Fife, Dallas.

Utah.—W. L. Ellerbeck, 21 Hooper Building, Salt Lake City.

Virginia.—F. W. Stiff, Richmond.

West Virginia.—H. H. Harrison, 1141 Main Street, Wheeling.

Wisconsin.—A. D. Gropper, 401 E. Water Street, Milwaukee.

For the Committee of Organization,

EDWARD C. KIRK,

Secretary.

INSTITUTE OF DENTAL PEDAGOGICS.

FOLLOWING is the programme of the meeting to be held in Buffalo, December 28, 29, and 30, 1903, at the Iroquois Hotel. All interested in education and the elevation of the standards of the dental colleges and students are very earnestly requested to be present at this meeting.

1. President's Address. "Some Faults of the Prevailing Dental Training." By Dr. J. D. Patterson, Kansas City. Discussion to be opened by Dr. John I. Hart, New York; Dr. B. Holly Smith, Baltimore; Dr. H. P. Carlton, San Francisco; Dr. Geo. E. Hunt, Indianapolis; Dr. R. H. Hofheinz, Rochester.

2. Prosthesis. Two papers. (a) "Methods of teaching the Artistic Elements of Prosthetic Dentistry." By Dr. A. A. Hunt, Omaha, Neb. (b) "Methods of teaching the Anatomical Arrangement of Teeth." By Dr. B. J. Cigrand, Chicago. Discussion to be opened by Dr. N. S. Hoff, Ann Arbor; Dr. G. H. Wilson, Cleveland; Dr. R. R. Freeman, Nashville; Dr. F. H. Berry, Milwaukee.

3. "An Ideal in Pathology." Paper by Dr. D. R. Stubblefield, Nashville. Discussion to be opened by Dr. H. A. Smith, Cincin-

nati; Dr. T. B. Hartzell, Minneapolis; Dr. A. H. Peck, Chicago; Dr. O. L. Hertig, Pittsburg.

4. "Orthodontia Technology." Two papers. By Dr. S. H. Guilford, Philadelphia; Dr. C. S. Case, Chicago. Discussion will be opened by Dr. W. E. Grant, Louisville; Dr. A. E. Webster, Toronto; Dr. H. B. Pullen, Buffalo; Dr. H. T. Smith, Cincinnati.

5. "The Value of Instruction in Dental History and Literature." Paper by Dr. H. L. Ambler, Cleveland. Discussion to be opened by Dr. Charles McManus, Hartford; Dr. J. H. Kennerly, St. Louis; Dr. B. J. Cigrand, Chicago.

6. "Porcelain Technology." Paper by Dr. H. J. Goslee. Discussion to be opened by Dr. J. Q. Byram, Indianapolis; Dr. Ambler Tees, Philadelphia; Dr. L. E. Custer, Dayton; Dr. H. L. Bانشaf, Milwaukee; Dr. J. F. Ross, Toronto.

7. "The Dental Curriculum." Paper by Dr. Geo. E. Hunt, Indianapolis. Discussion to be opened by Dr. G. V. Black, Chicago; Dr. J. B. Willmott, Toronto.

8. "How shall Quizzes be conducted?" Symposium by Dr. F. D. Weisse, New York; Dr. R. H. Nones, Philadelphia; Dr. L. P. Bethel, Columbus.

9. Exhibition of recent teaching appliances, including books and charts. Dr. W. G. Foster, Baltimore; Dr. L. S. Tenny, Chicago.

10. Report of Master of Exhibits. Dr. Ellison Hillyer, Brooklyn.

11. Banquet, Wednesday evening.

A GOLDEN ANNIVERSARY CELEBRATION.

CLASS OF 1854, PHILADELPHIA COLLEGE OF DENTAL SURGERY.

THE dental profession of Philadelphia, represented by all of its organizations, will celebrate on February 27, 1904, the fiftieth anniversary of the graduation of the Class of 1854 of the Philadelphia College of Dental Surgery by a complimentary banquet to the surviving members of the class, consisting of Drs. LOUIS JACK, JAMES TRUMAN, C. NEWLIN PEIRCE, and W. STORER HOW.

All dentists in good standing are invited to participate. The subscription price, including a banquet ticket and one copy of the souvenir historical volume to be published in commemoration of the event, has been fixed at ten dollars. The subscription list will be open until February 10, 1904.

The committee in charge of the celebration consists of the following members:

EDWIN T. DARBY,	G. L. S. Jameson,
Edward C. Kirk,	J. D. THOMAS,
R. H. D. Swing,	WILBUR F. LITCH,
Albert N. Gaylord,	H. C. REGISTER,
Earl C. Rice,	WM. H. TRUEMAN,
I. N. Broomell,	ROBERT HUEY,
J. T. Lippincott,	WM. L. J. GRIFFIN,
L. Foster Jack,	J. CLARENCE SALVAS,

D. N. McQUILLEN.

Applications together with the subscription may be forwarded to the chairman of the Invitation Committee,

ROBERT HUEY, D.D.S.,
330 South Fifteenth Street, Philadelphia.

HARTFORD DENTAL SOCIETY.

At the annual meeting of the Hartford Dental Society, held October 12, 1903, the following officers were elected:

President, Dr. Edward Eberle; Vice-President, Dr. Albert W. Cowee; Secretary, Dr. A. E. Cary; Treasurer, Dr. Ernest R. Whitford; Librarian, Dr. William A. Damon; Historian, Dr. Nelson J. Goodwin.

Executive Committee.—Dr. C. E. Barrett, Chairman; Dr. F. Dewey Clark, Dr. C. C. Prentiss.

ALBERT E. CARY,
Secretary.

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